



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

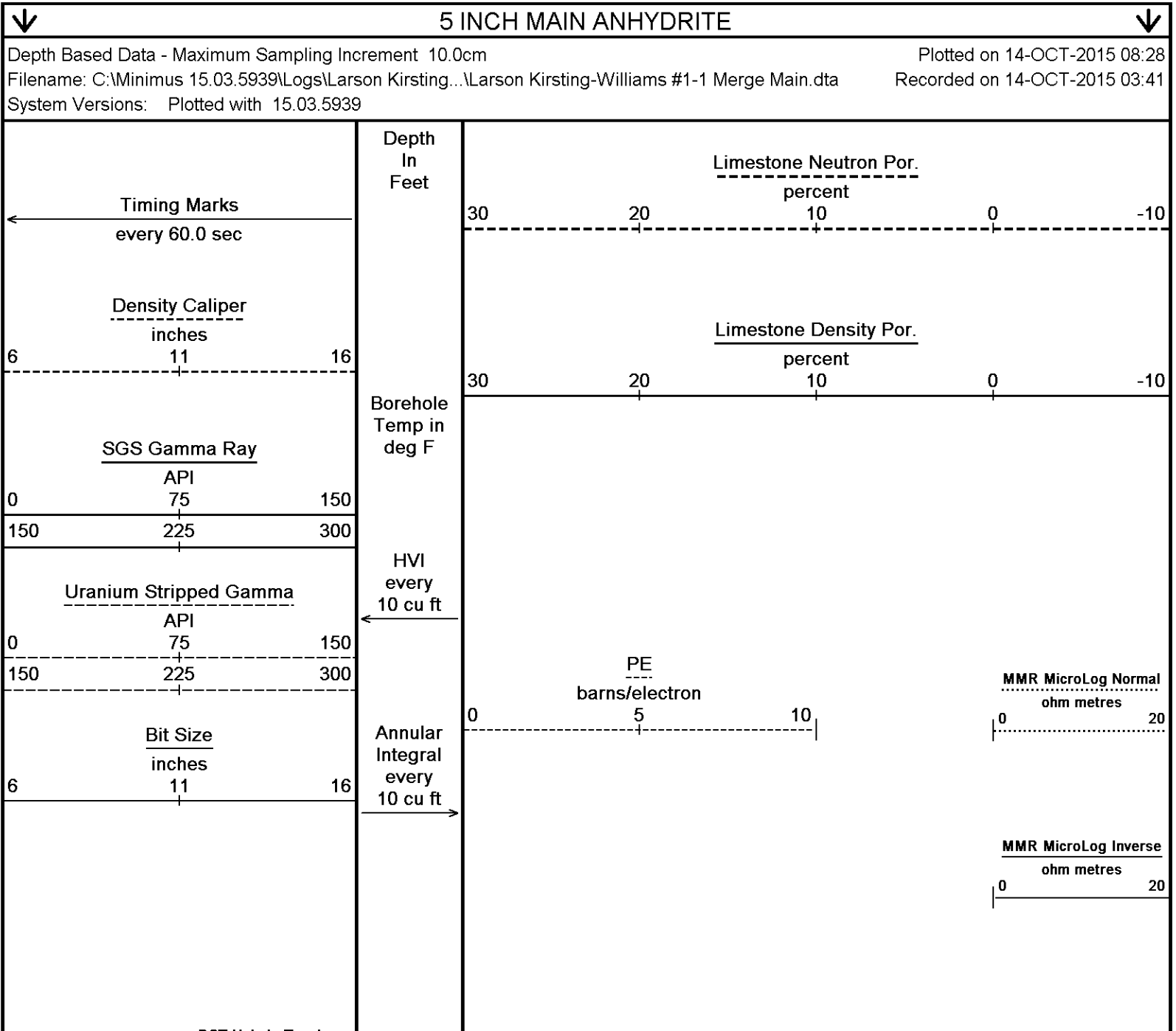
COMPANY			LARSON ENGINEERING, INC		
WELL			KIRSTING-WILLIAMS #1-1		
FIELD			WILDCAT		
PROVINCE/COUNTY			FORD		
COUNTRY/STATE			U.S.A. / KANSAS		
LOCATION			330' FSL & 2790' FWL		
SEC 1	TWP 26S	RGE 21W	Other Services		
Latitude	Longitude		MAI/MFE		
API Number			15-057-20966		
Permanent Datum GL, Elevation 2263 feet			SGS		
Log Measured From KB			Elevations:		
Drilling Measured From KB @ 9 feet			KB 2272.00 DF 2270.00 GL 2263.00		
Date	14-OCT-2015				
Run Number	ONE				
Service Order	7577-131963122				
Depth Driller	4850.00		feet		
Depth Logger	4850.00		feet		
First Reading	4831.00		feet		
Last Reading	3950.00		feet		
Casing Driller	265.00		feet		
Casing Logger	265.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.30 lb/USg	65.00 CP			
PH / Fluid Loss	9.50	10.00 ml/30Min			
Sample Source	MUD PIT				
Rm @ Measured Temp	0.74 @ 75.0	ohm-m			
Rmf @ Measured Temp	0.59 @ 75.0	ohm-m			
Rmc @ Measured Temp	0.89 @ 75.0	ohm-m			
Source Rmf / Rmc	CALC	CALC			
Rm @ BHT	0.52 @110.0	ohm-m			
Time Since Circulation	4 HOURS				
Max Recorded Temp	110.00	deg F			
Equipment / Base	13096	OKC			
Recorded By	JEFFREY RANDLE				
Witnessed By	VERN SCHRAG		THOMAS LARSON		

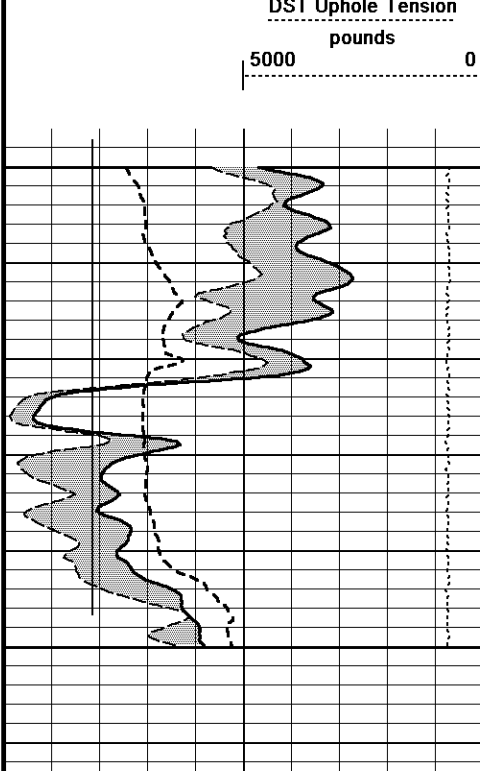
BOREHOLE RECORD					Last Edited: 14-OCT-2015 06:42
Bit Size inches		Depth From feet		Depth To feet	
12.250		0.00		270.00	
7.875		270.00		4850.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	265.00	36.00	

REMARKS
- SOFTWARE ISSUE: WLS 15.03.5939.
- TOOL STRING: MCG, SGS, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER. MPD: 8 INCH PROFILE PLATE FITTED. MFE: 1 X 0.5 INCH STANDOFF. MAI: 2 X 0.5 INCH STANDOFF.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY..
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING.: 2069 CU. FT.

- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO SURFACE CASING.: 1312 CU. FT.
- RIG: HD #3.
- ENGINEER: JEFFREY RANDLE.
- OPERATOR: JOHN LAPOINT.

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.





Replay
Scale
1:240

1300

90°

1350

Depth
In
Feet

Timing Marks
every 60.0 sec

Density Caliper
inches

6 11 16

SGS Gamma Ray
API

0 75 150

150 225 300

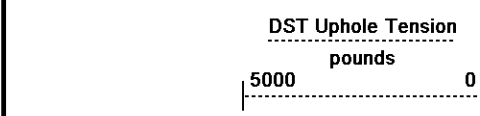
Uranium Stripped Gamma
API

0 75 150

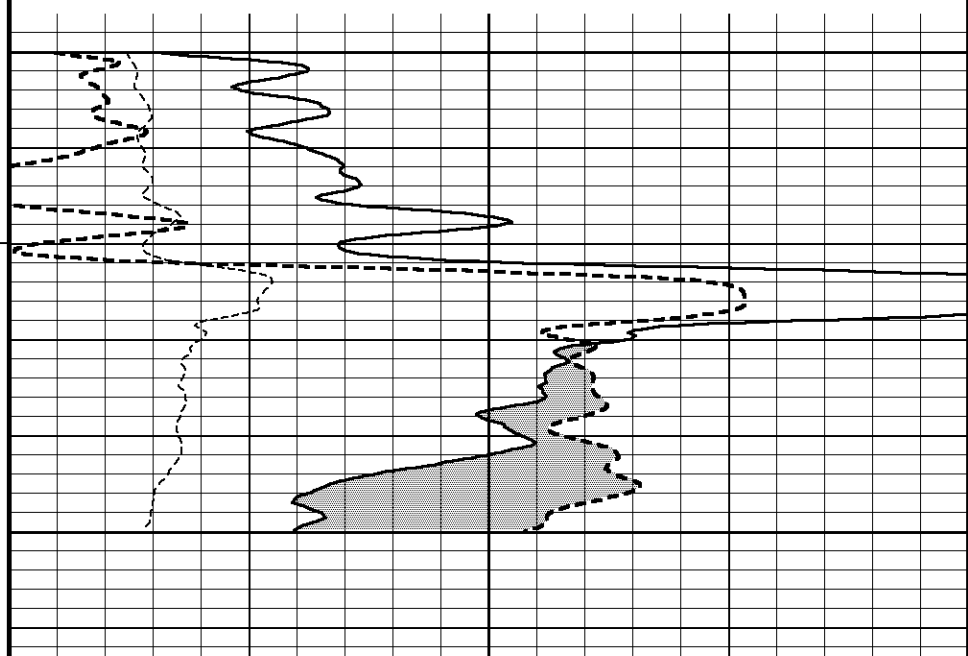
150 225 300

Bit Size
inches

6 11 16



Replay
Scale
1:240



Limestone Neutron Por.
percent

30 20 10 0 -10

Limestone Density Por.
percent

30 20 10 0 -10

Borehole
Temp in
deg F

HVI
every
10 cu ft

PE
barns/electron

0 5 10

Annular
Integral
every
10 cu ft

MMR MicroLog Normal
ohm metres

0 20

MMR MicroLog Inverse
ohm metres

0 20

↑

5 INCH MAIN ANHYDRITE

↑

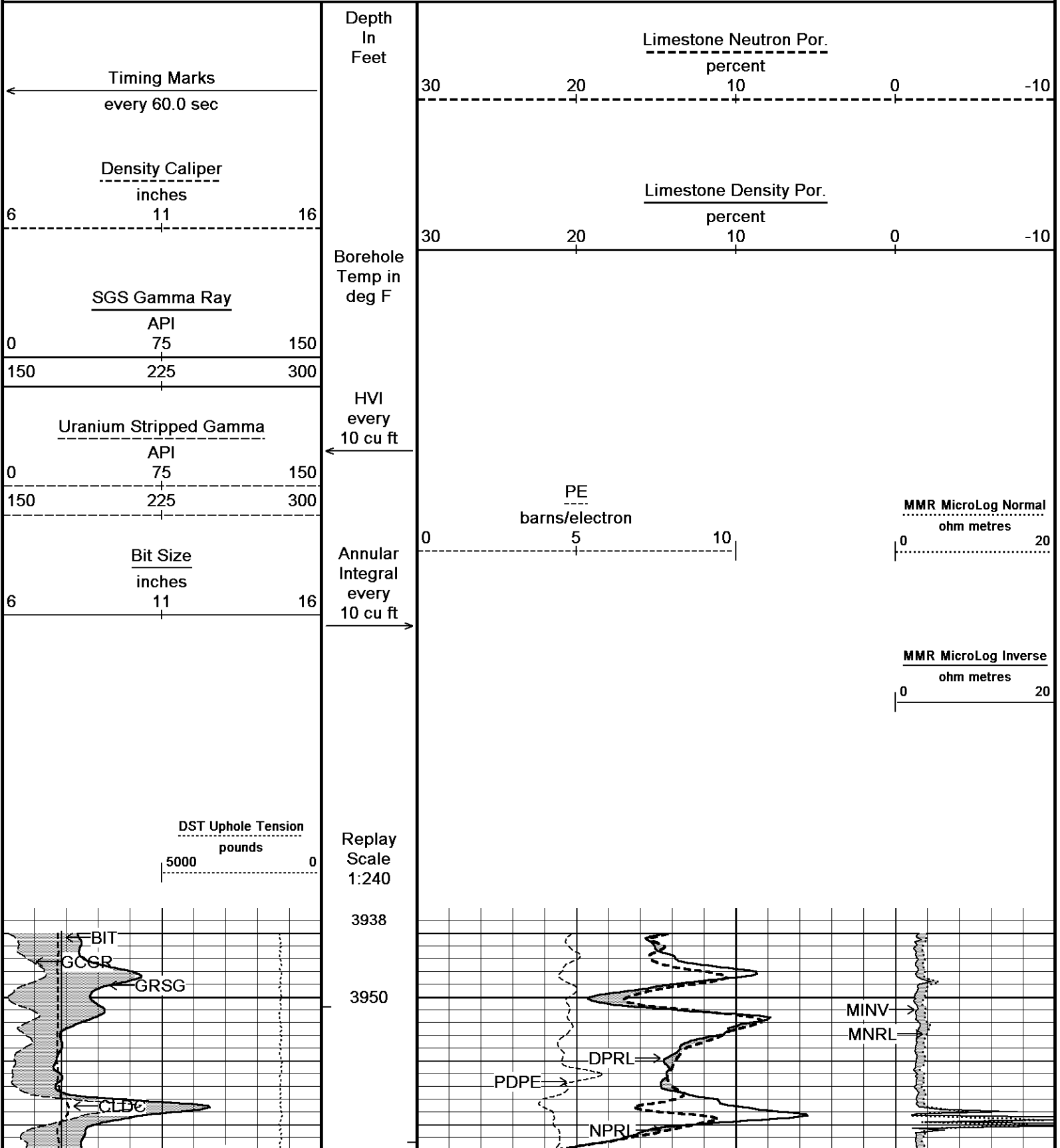
↓

5 INCH MAIN

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 15.03.5939\Logs\Larson Kirsting...\Larson Kirsting-Williams #1-1 Merge Main.dta
System Versions: Plotted with 15.03.5939

Plotted on 14-OCT-2015 08:28
Recorded on 14-OCT-2015 03:41



SMTU→

300

105°

4000

105°

4050

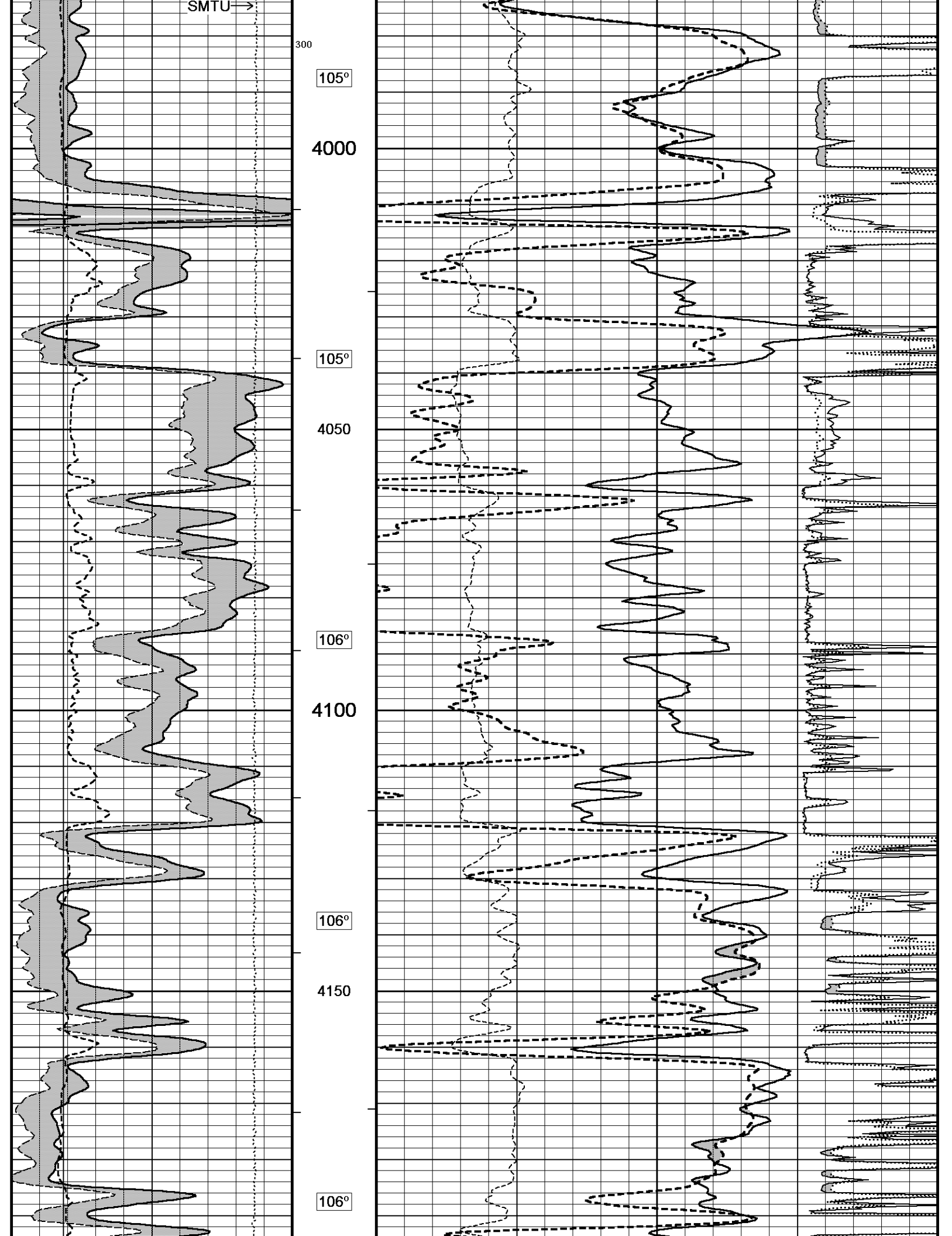
106°

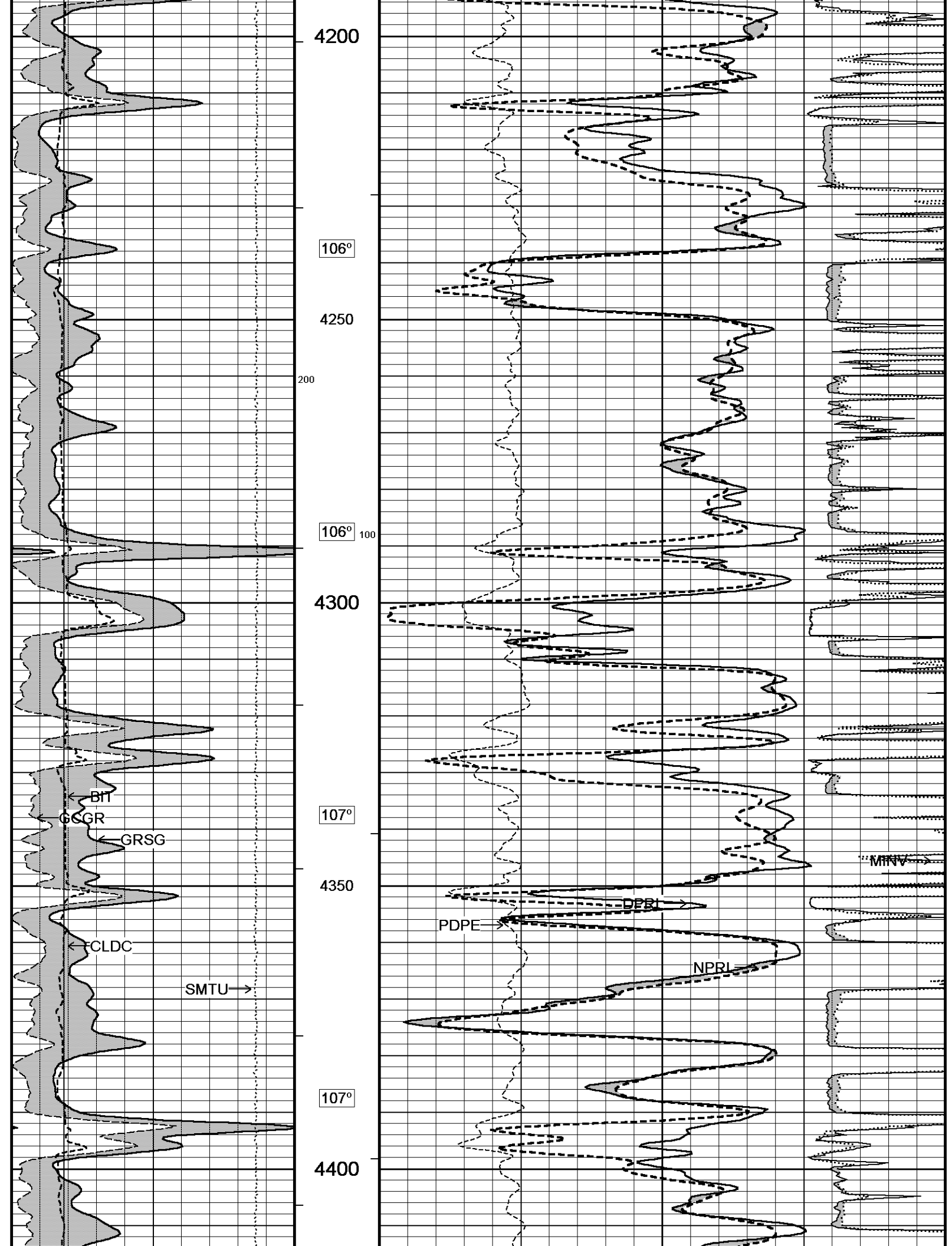
4100

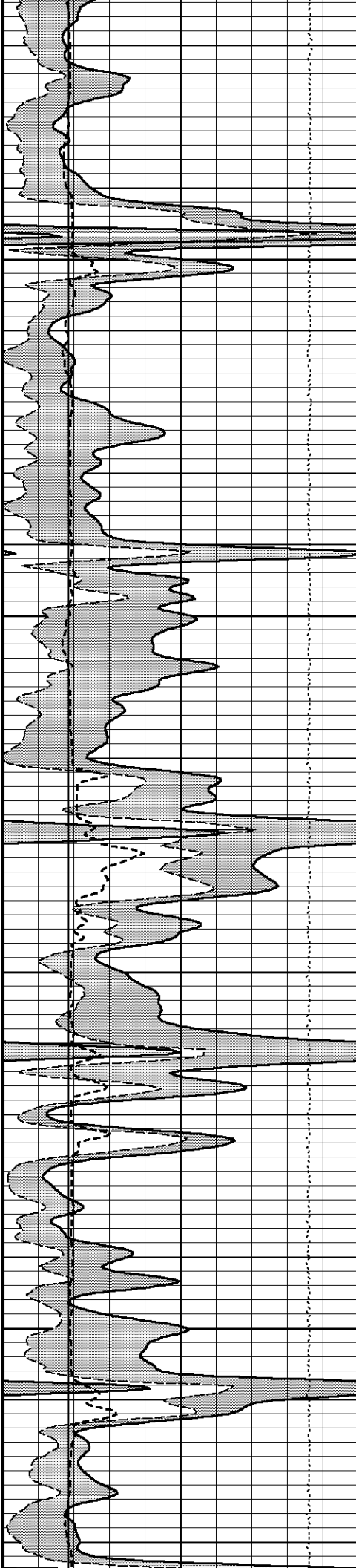
106°

4150

106°







108°

4450

108°

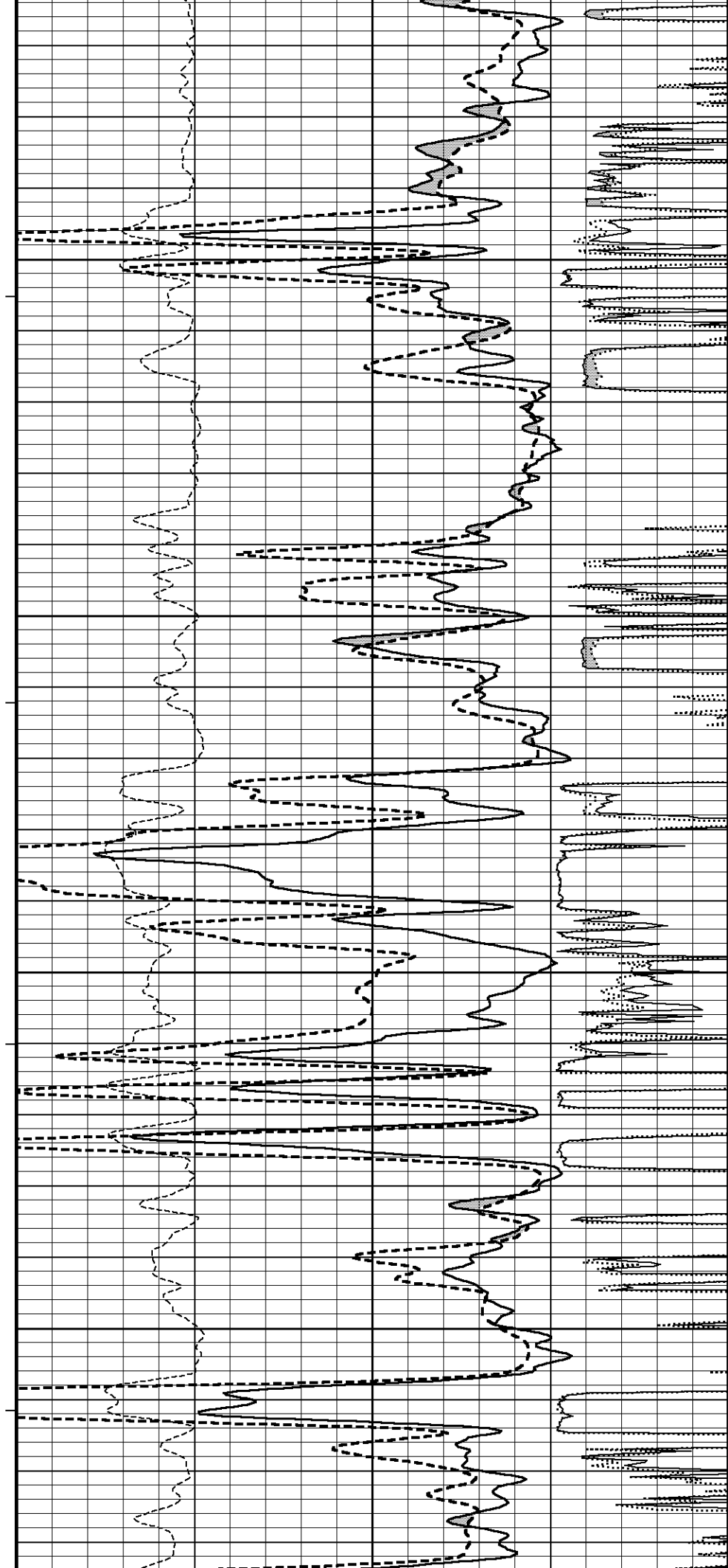
4500

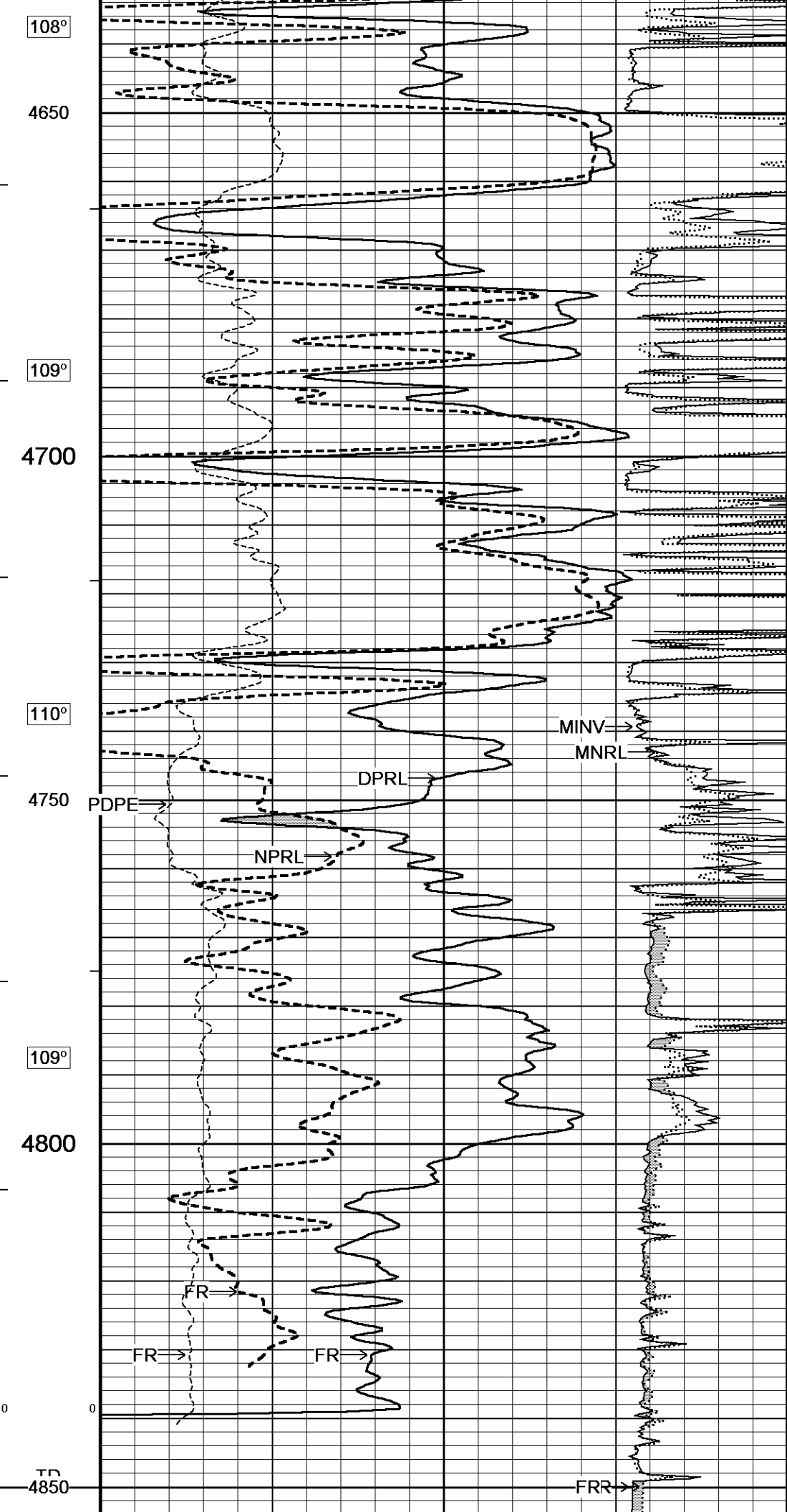
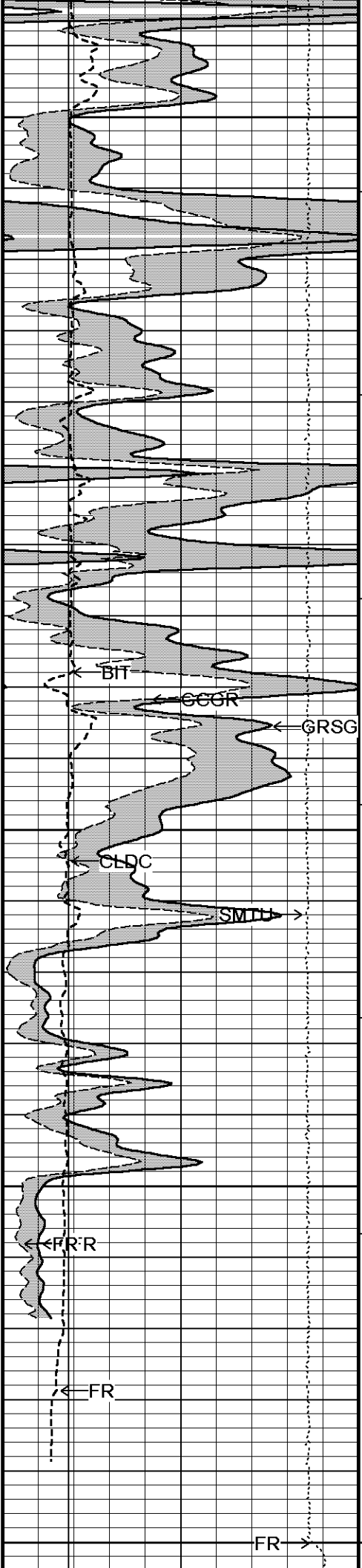
108°

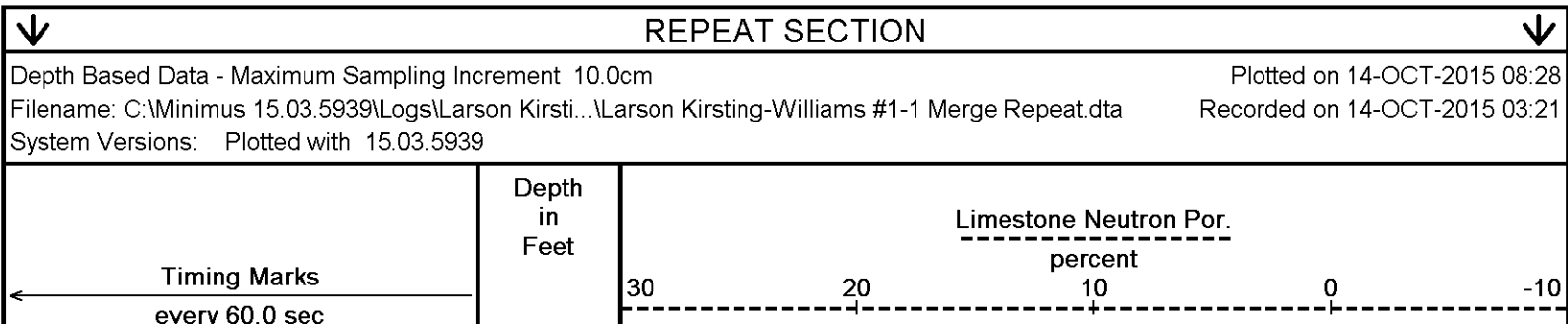
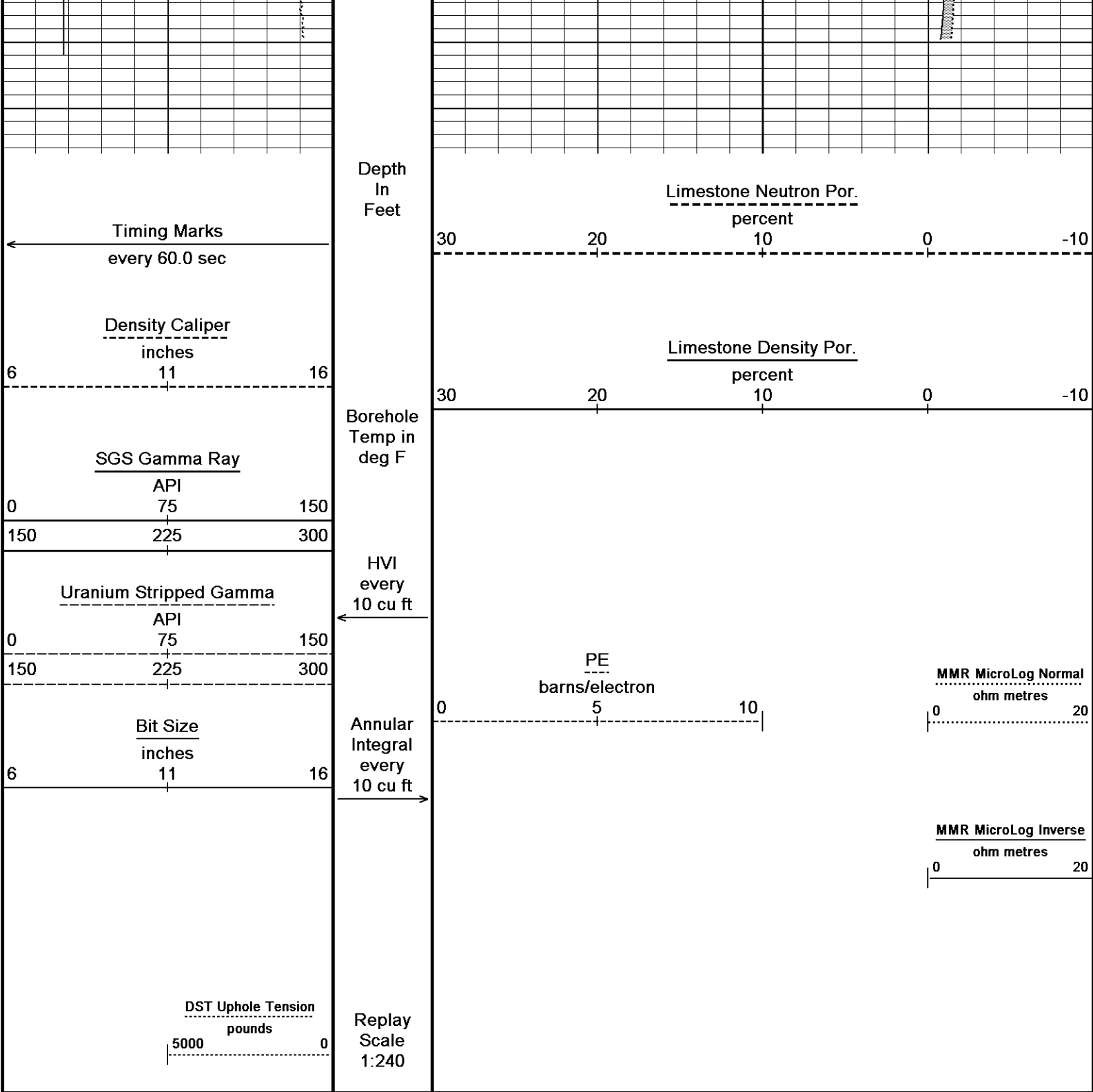
100 4550

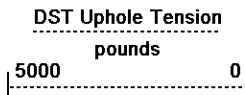
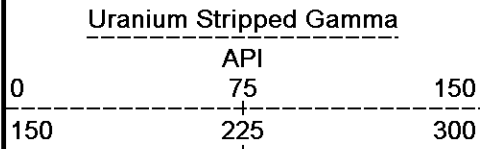
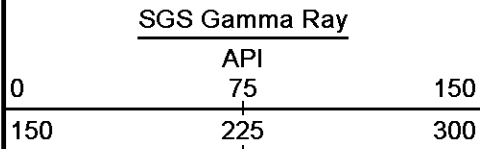
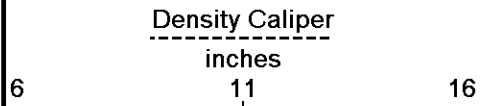
108°

4600









Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

4638

4650

108°

4700

Limestone Density Por.

percent

30 20 10 0 -10

PE
barns/electron

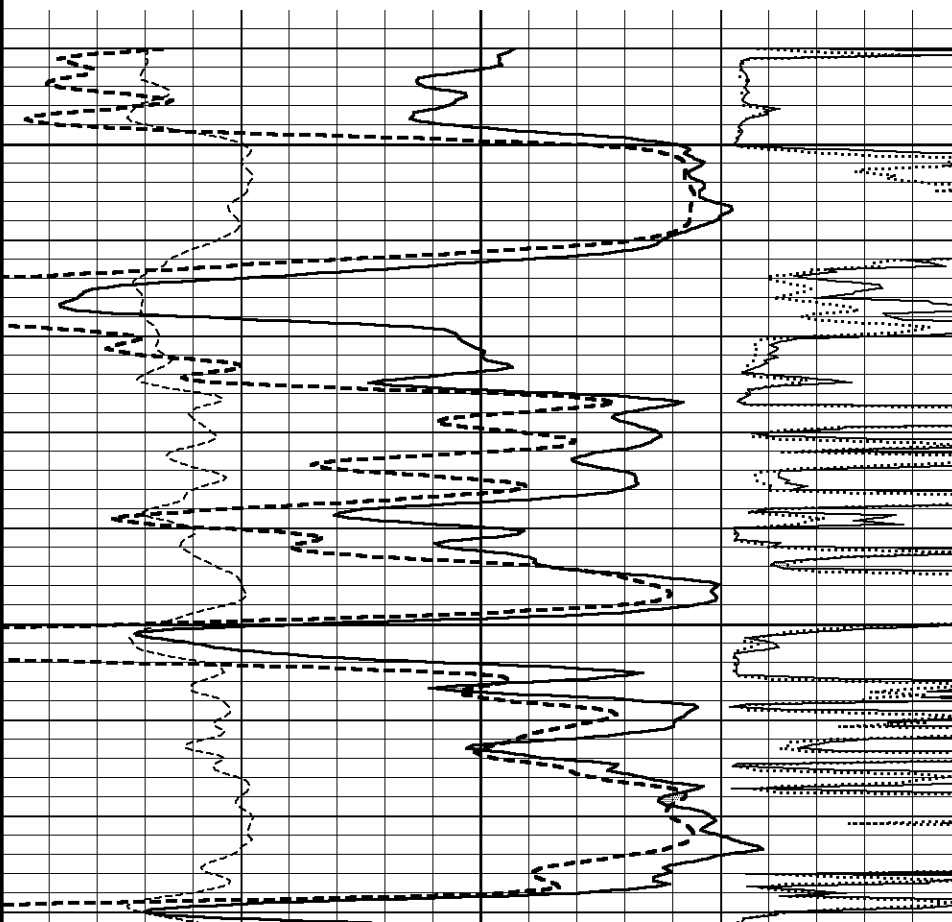
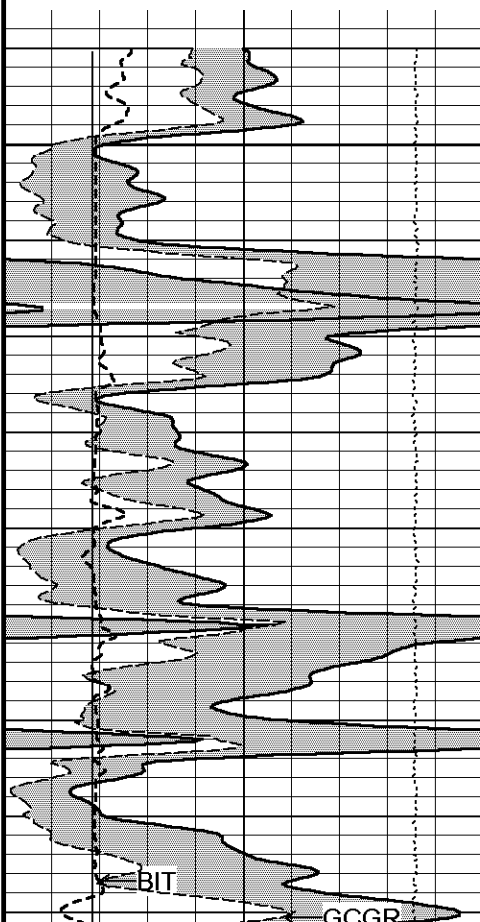
0 5 10

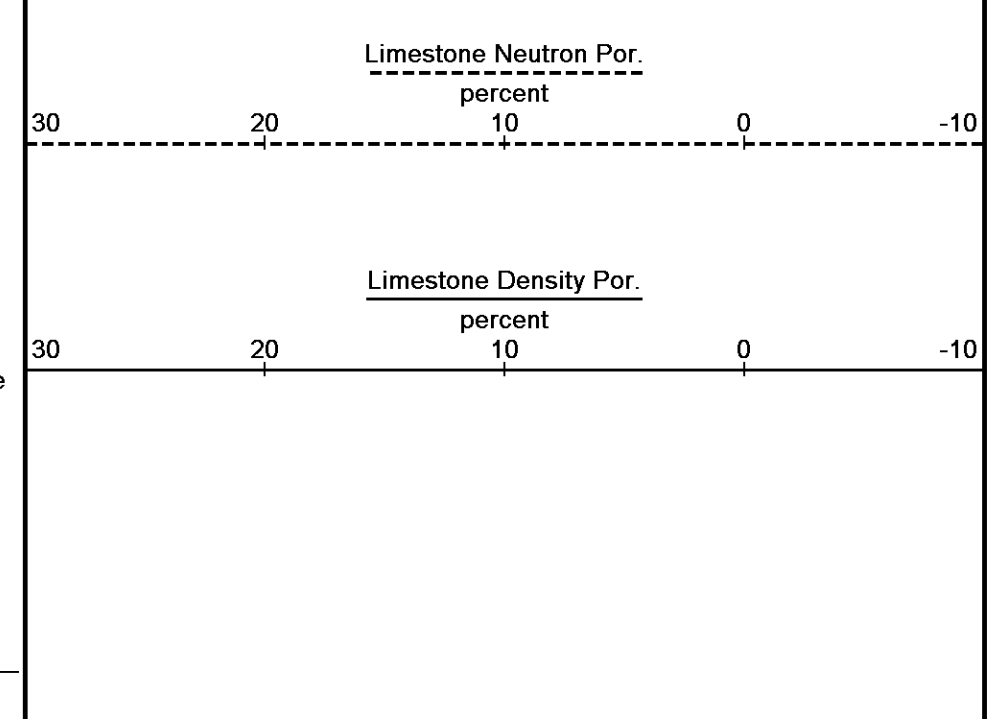
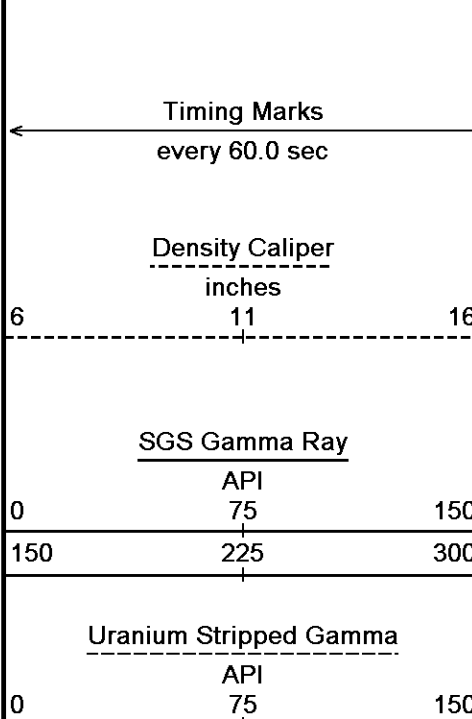
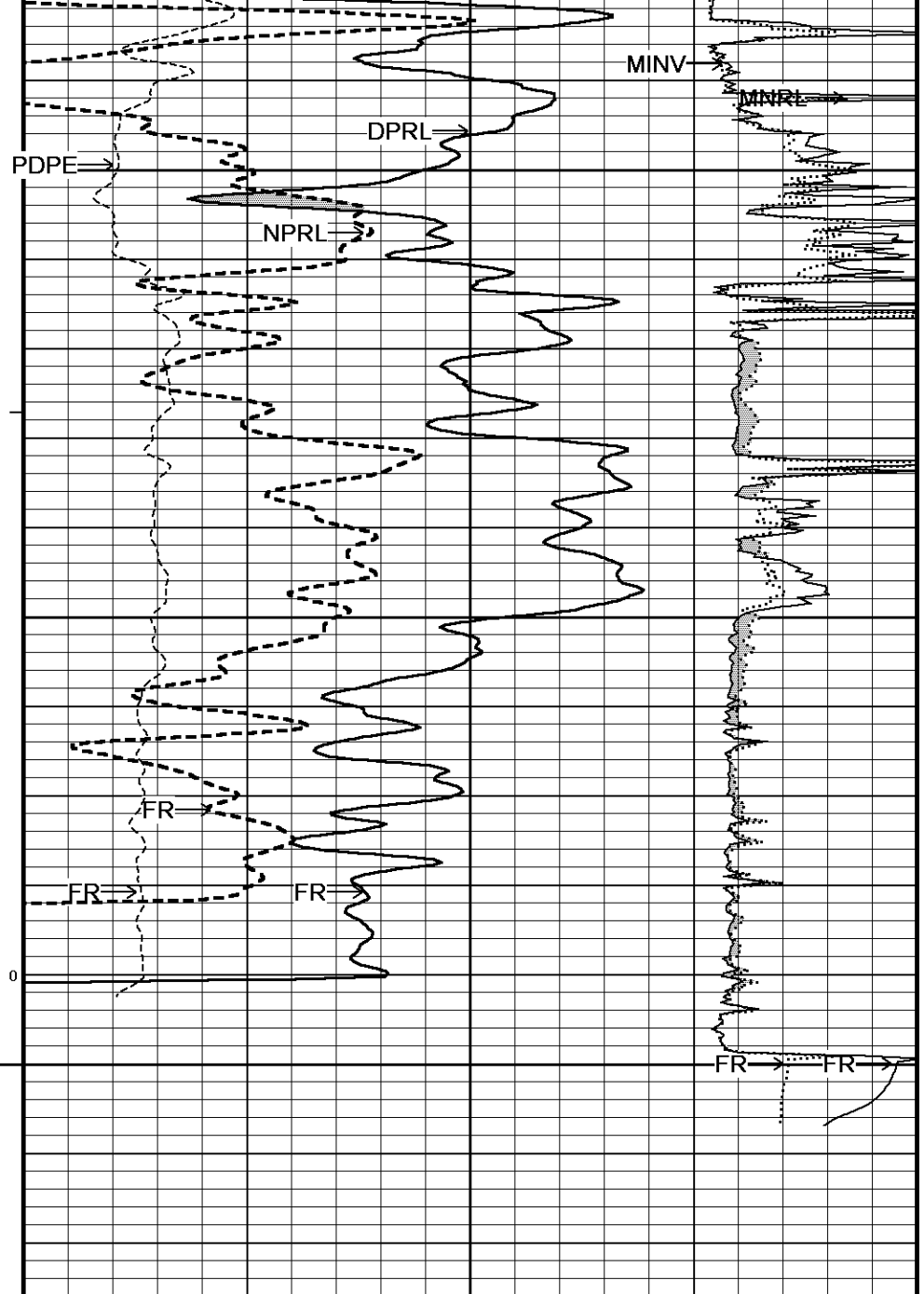
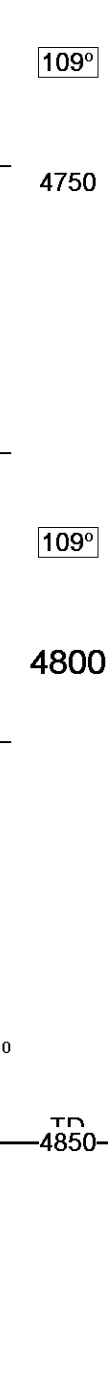
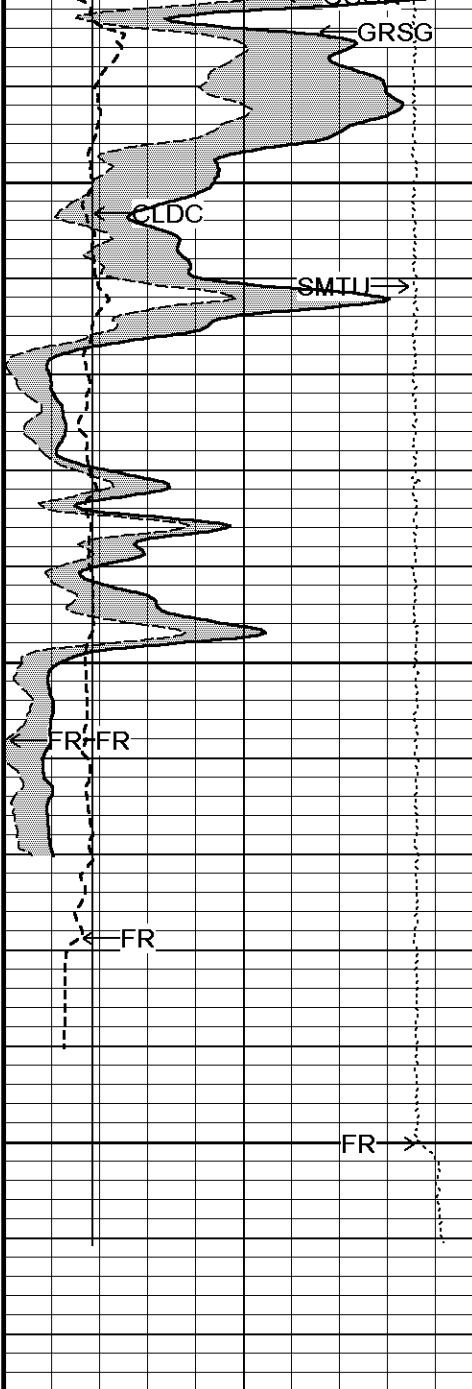
MMR MicroLog Normal
ohm metres

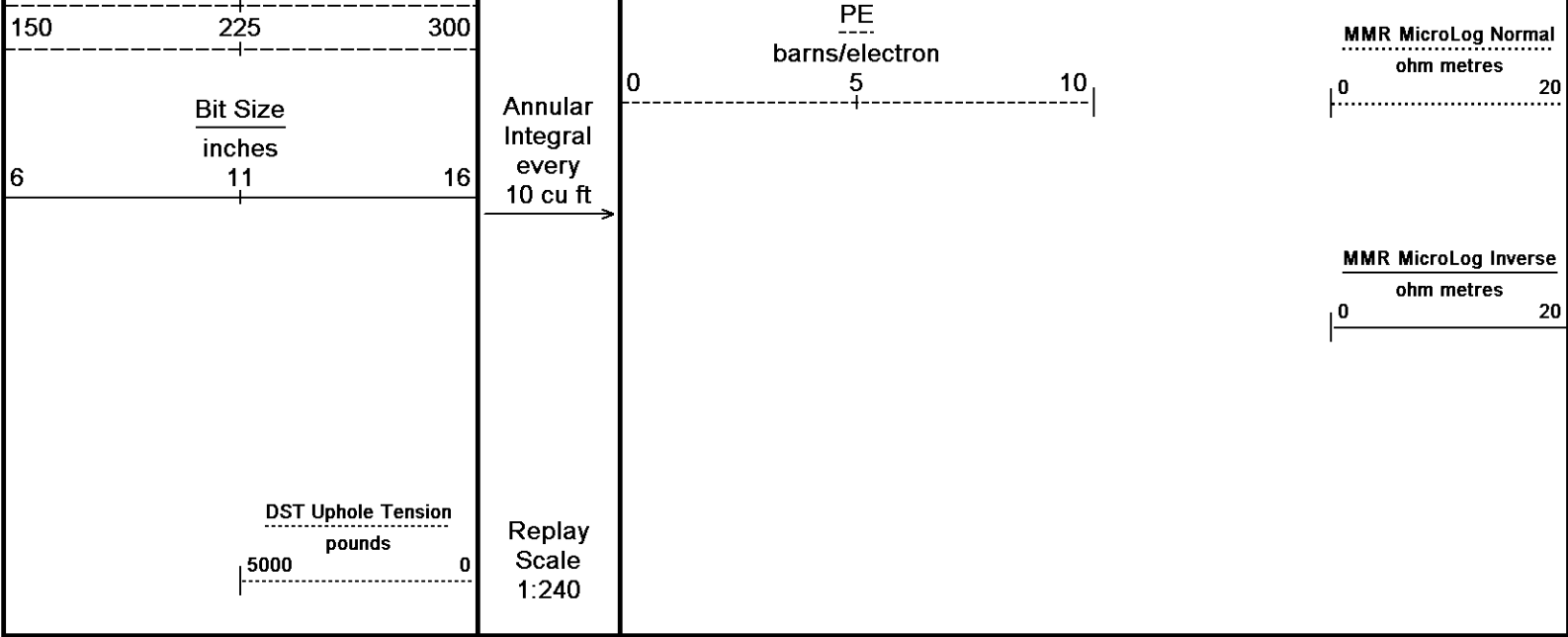
0 20

MMR MicroLog Inverse
ohm metres

0 20







Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 14-OCT-2015 08:28

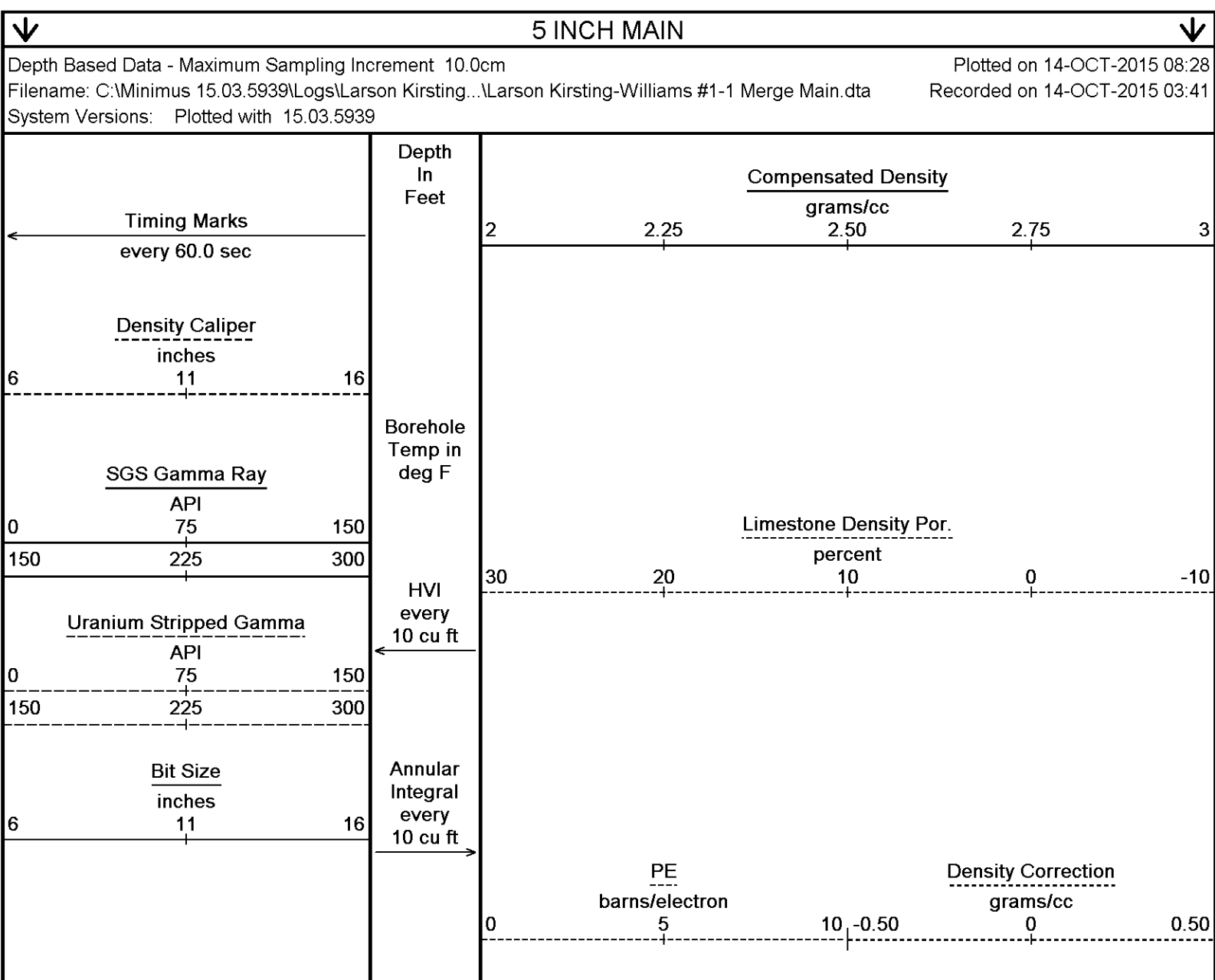
Filename: C:\Minimus 15.03.5939\Logs\Larson Kirsti...\Larson Kirsting-Williams #1-1 Merge Repeat.dtaRecorded on 14-OCT-2015 03:21

System Versions: Plotted with 15.03.5939

↑

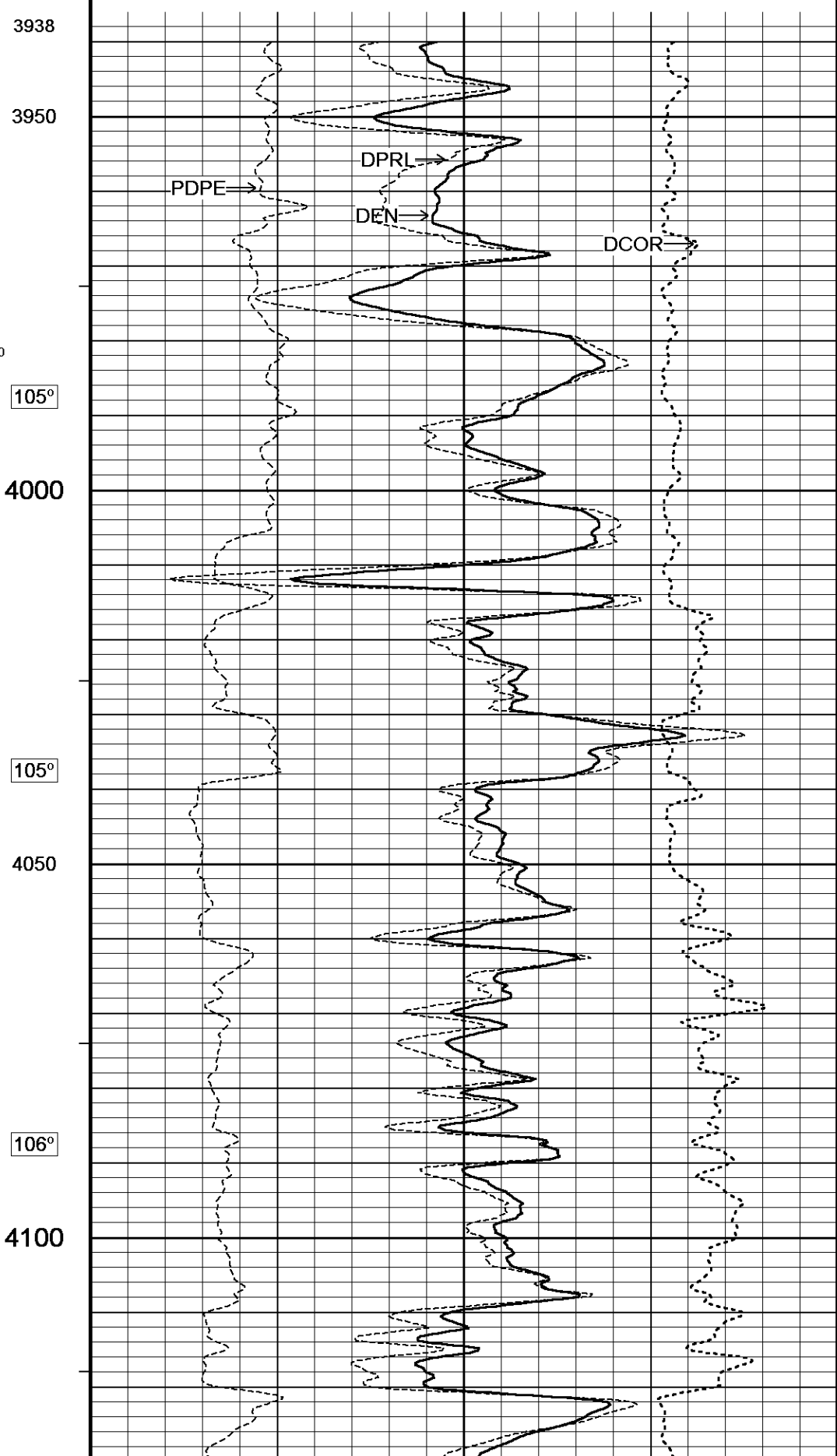
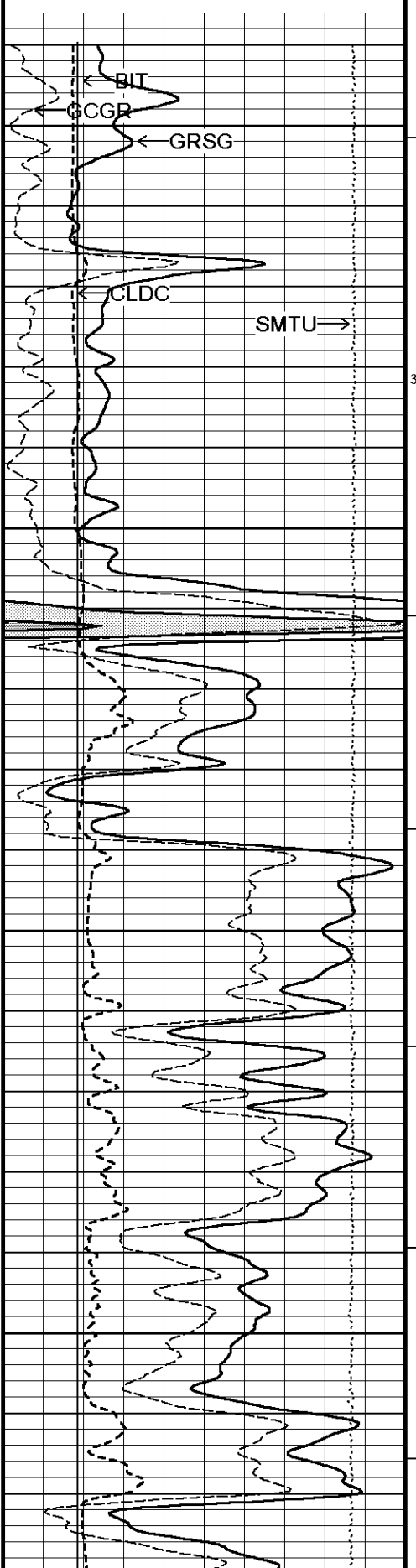
REPEAT SECTION

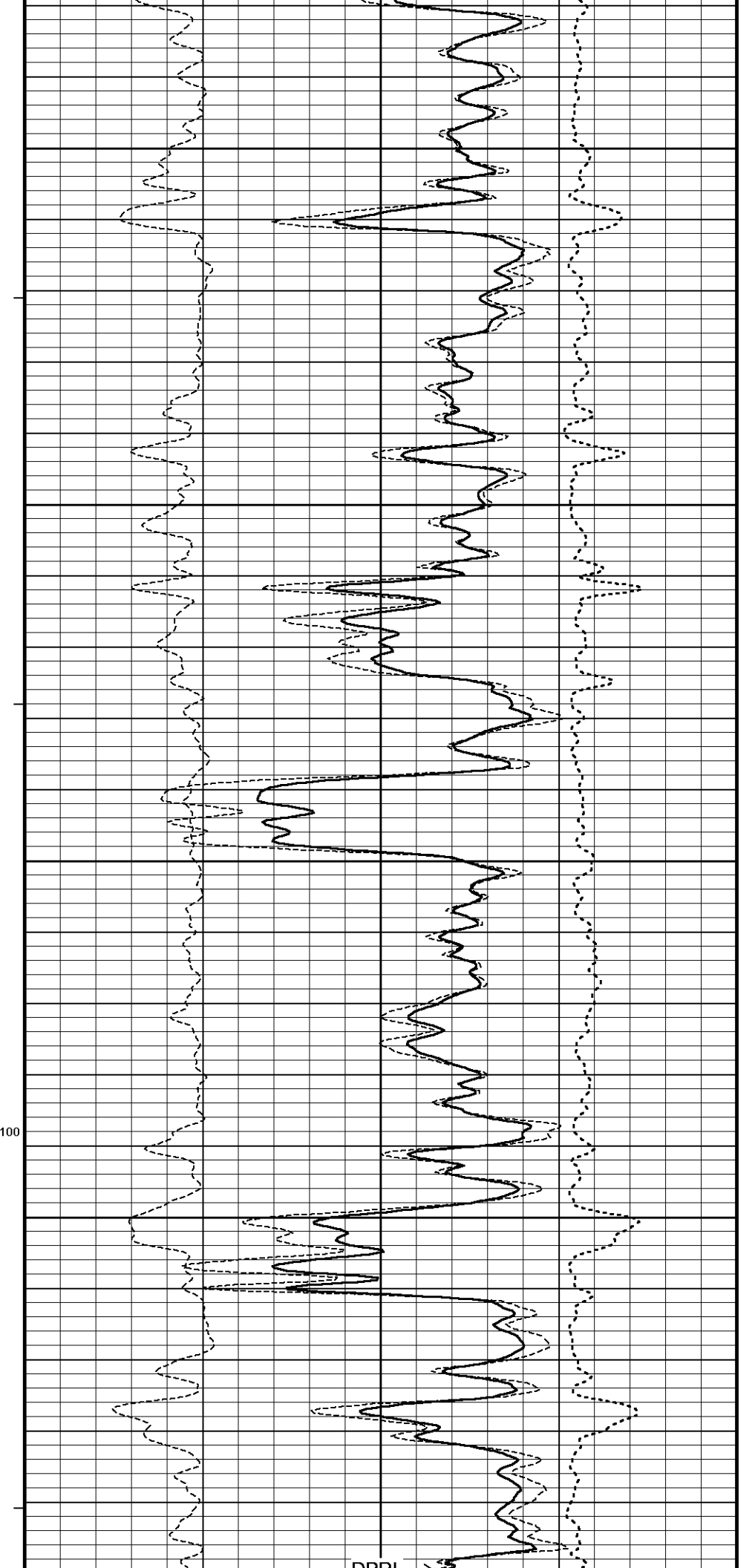
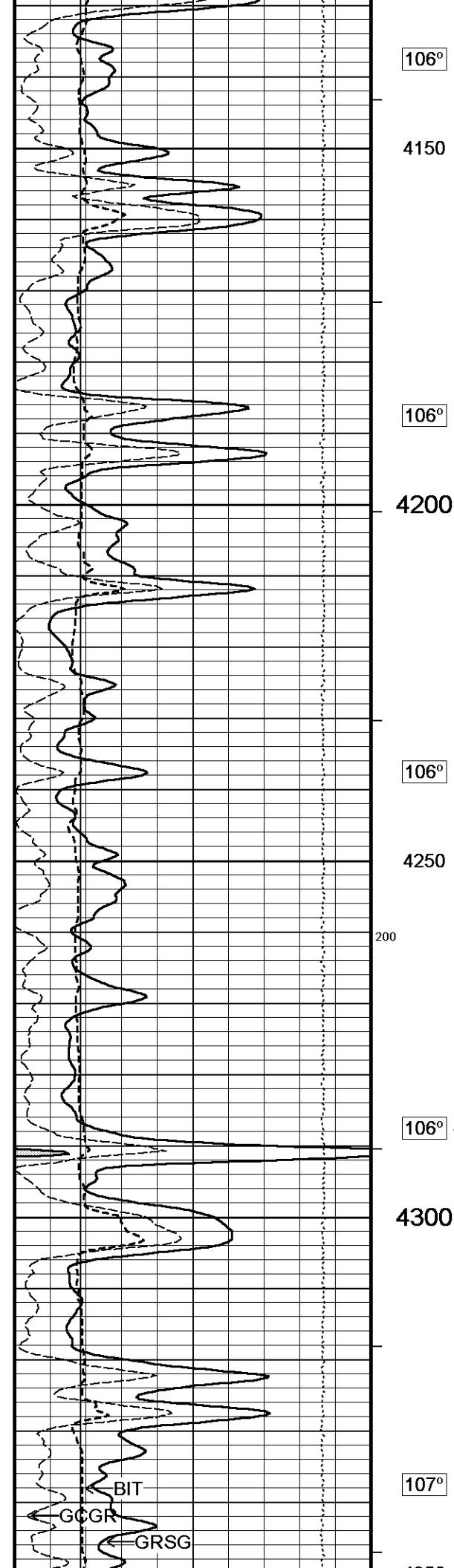
↑

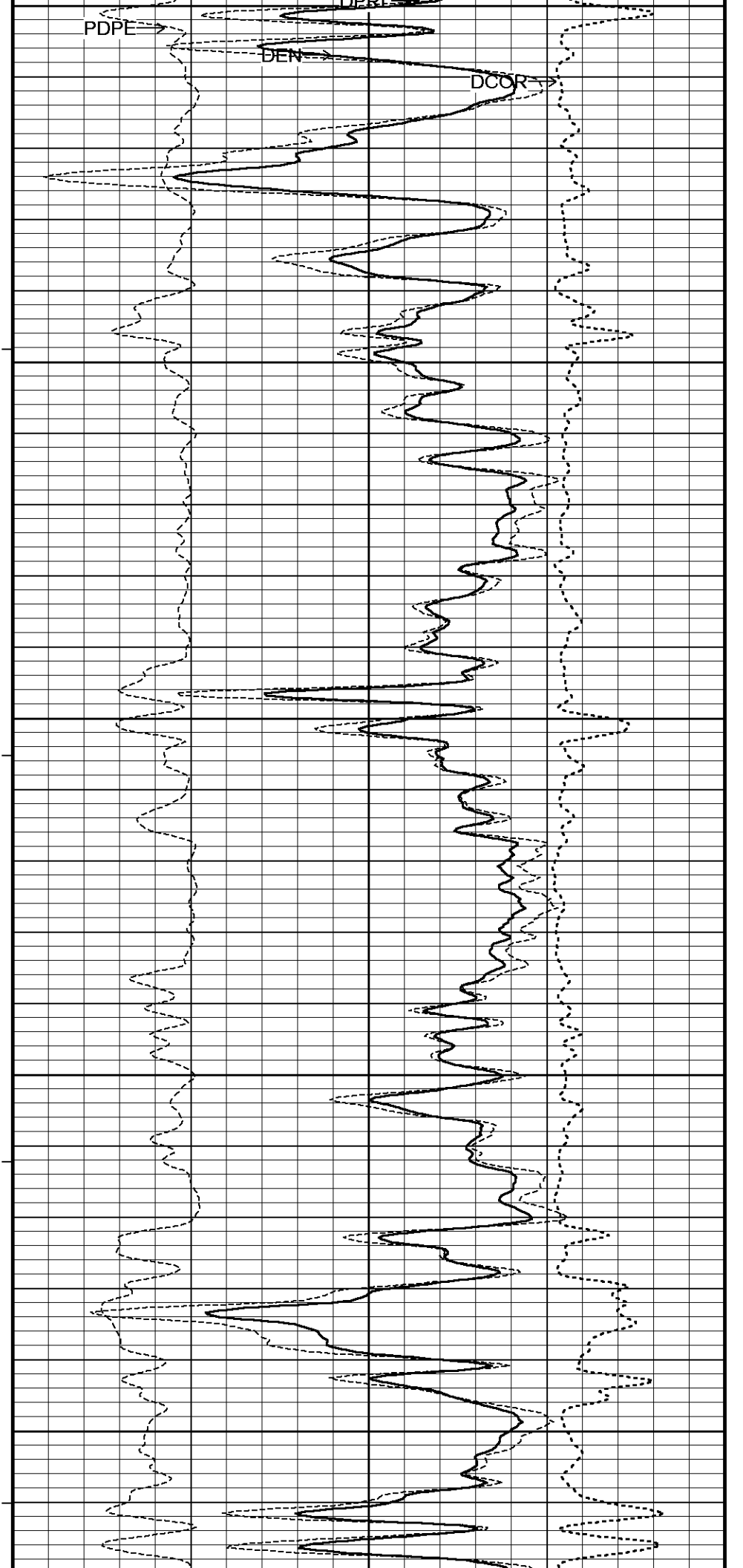
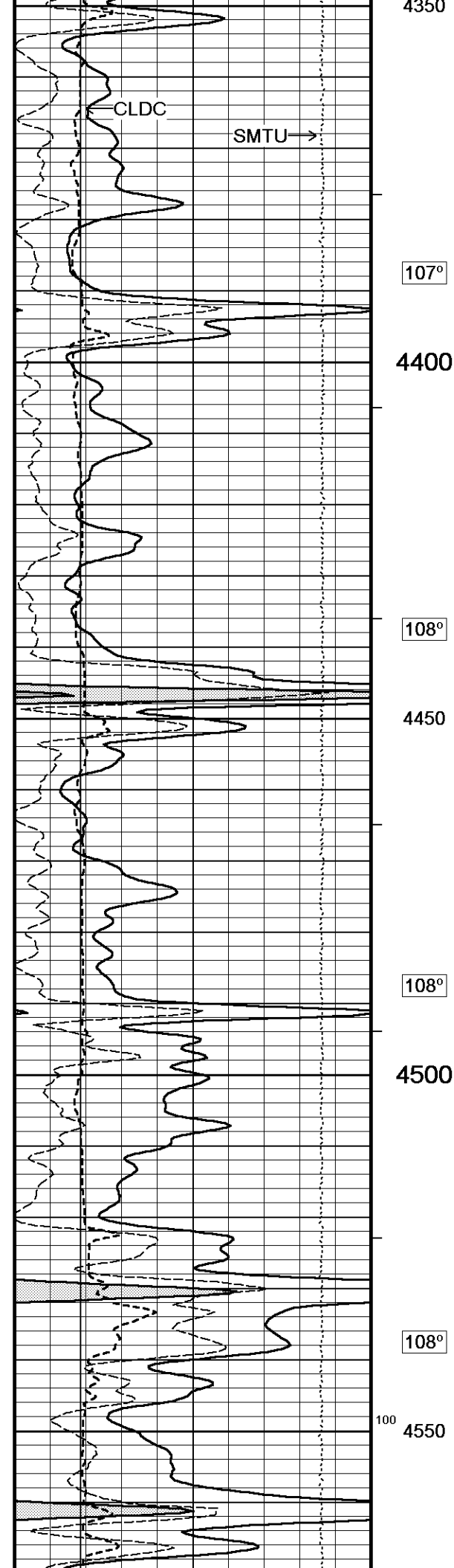


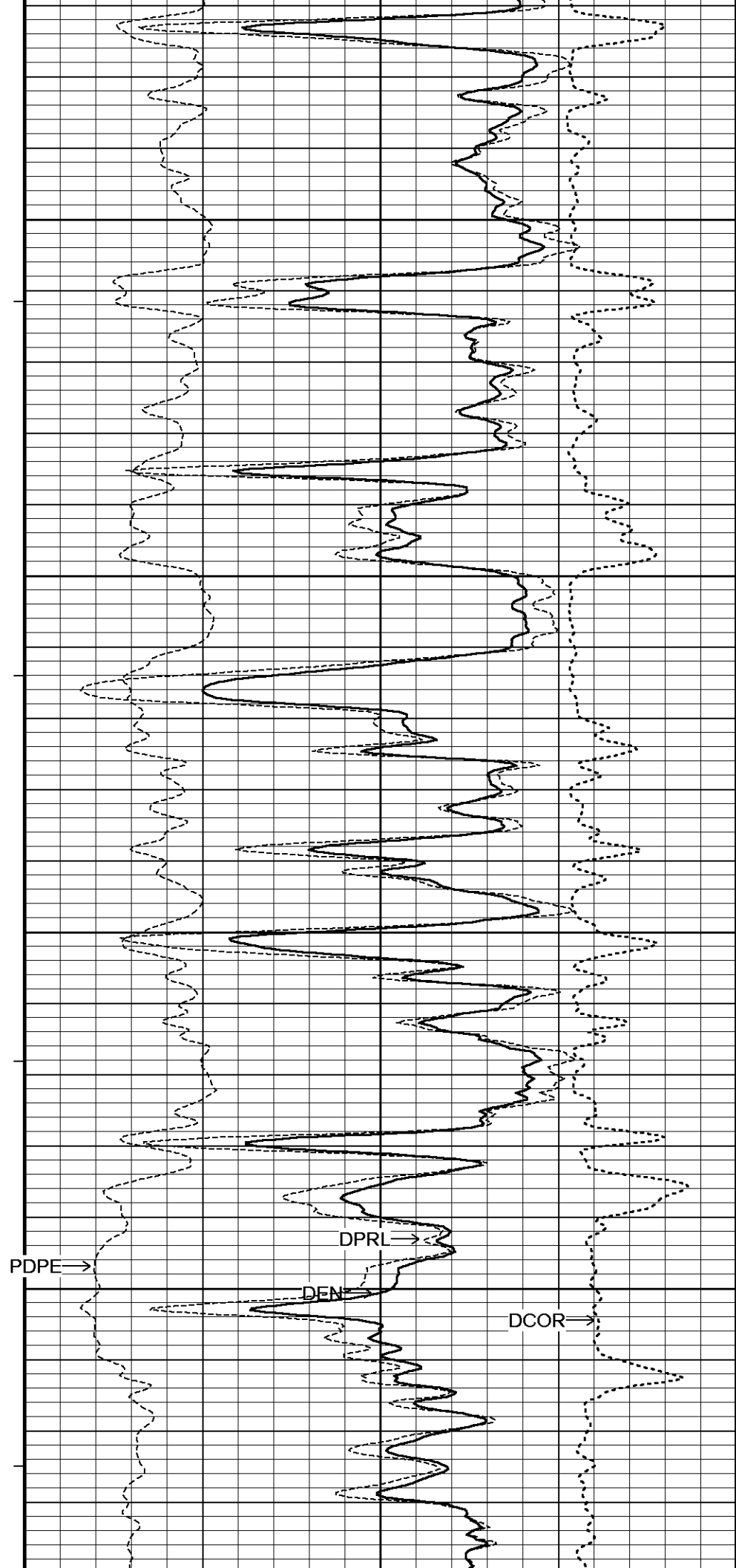
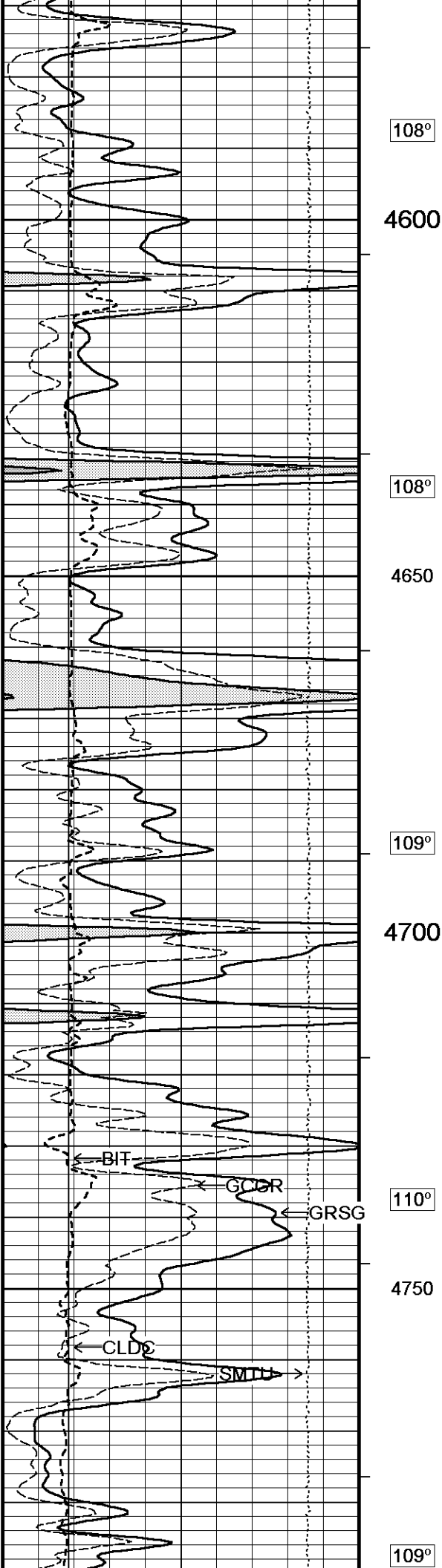
DST Uphole Tension
pounds
5000 0

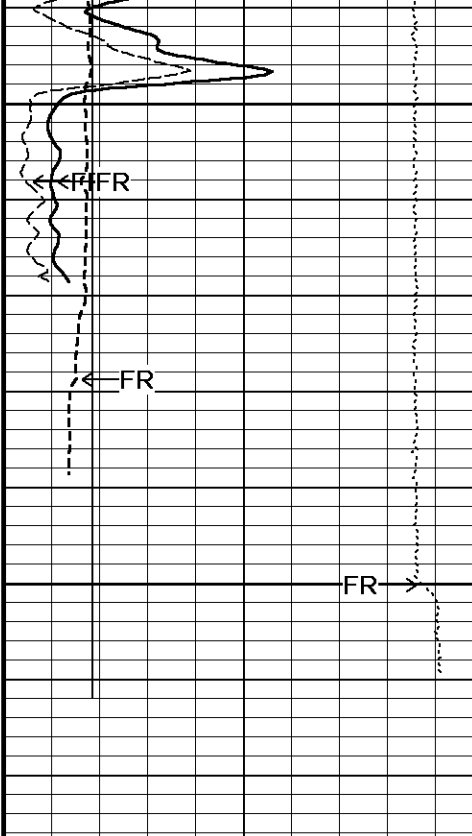
Replay
Scale
1:240











4800

0

TD
4850

FR →

Depth
In
Feet

Timing Marks
every 60.0 sec

Density Caliper
inches

6 11 16

SGS Gamma Ray

API

0 75 150

150 225 300

Borehole
Temp in
deg F

Uranium Stripped Gamma

API

0 75 150

150 225 300

HVI
every
10 cu ft

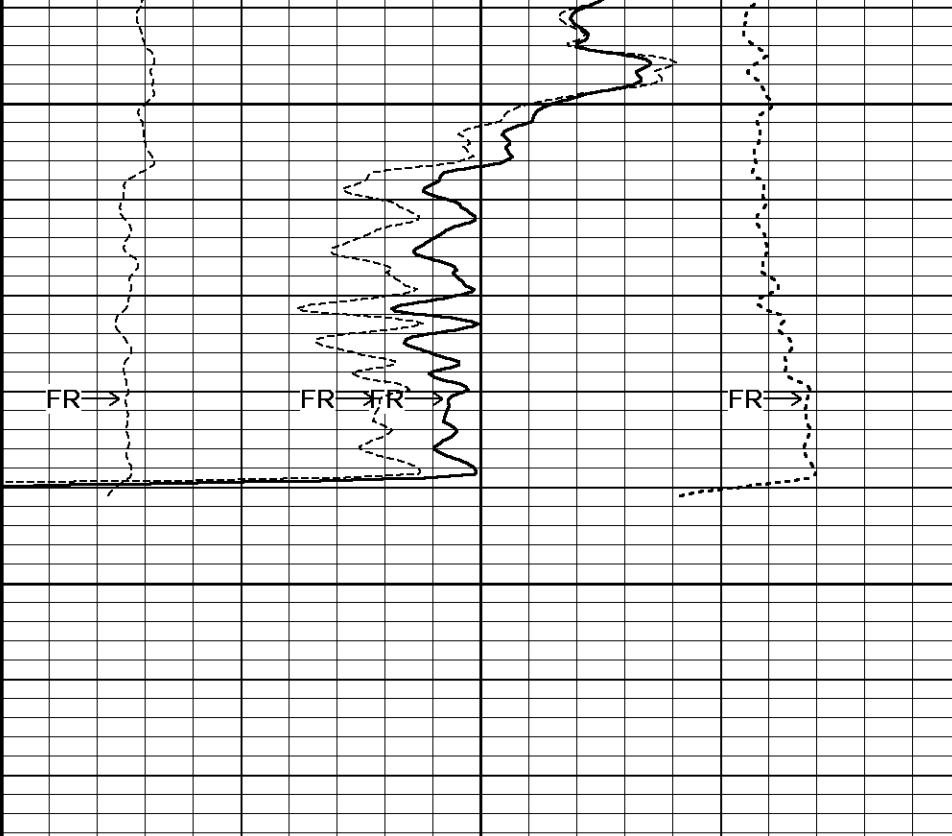
Bit Size
inches

6 11 16

Annular
Integral
every
10 cu ft

DST Uphole Tension
pounds

Replay



FR →

FR →

FR →

Compensated Density

grams/cc

2 2.25 2.50 2.75 3

Limestone Density Por.

percent

30 20 10 0 -10

PE
barns/electron

0 5 10

Density Correction
grams/cc

-0.50 0 0.50

5000 pounds 0
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 14-OCT-2015 08:28
Filename: C:\Minimus 15.03.5939\Logs\Larson Kirsting...\Larson Kirsting-Williams #1-1 Merge Main.dta
Recorded on 14-OCT-2015 03:41
System Versions: Plotted with 15.03.5939



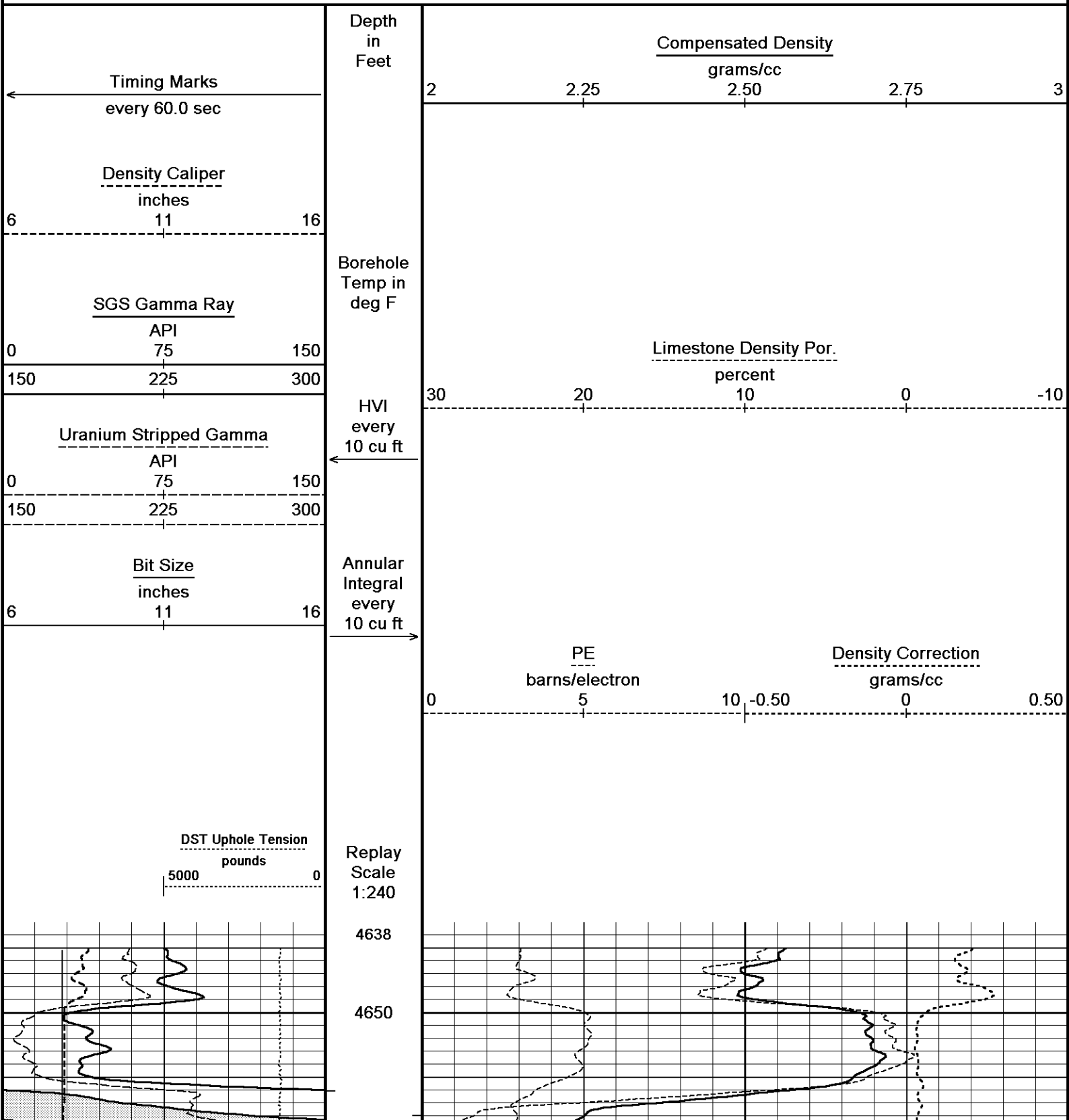
5 INCH MAIN

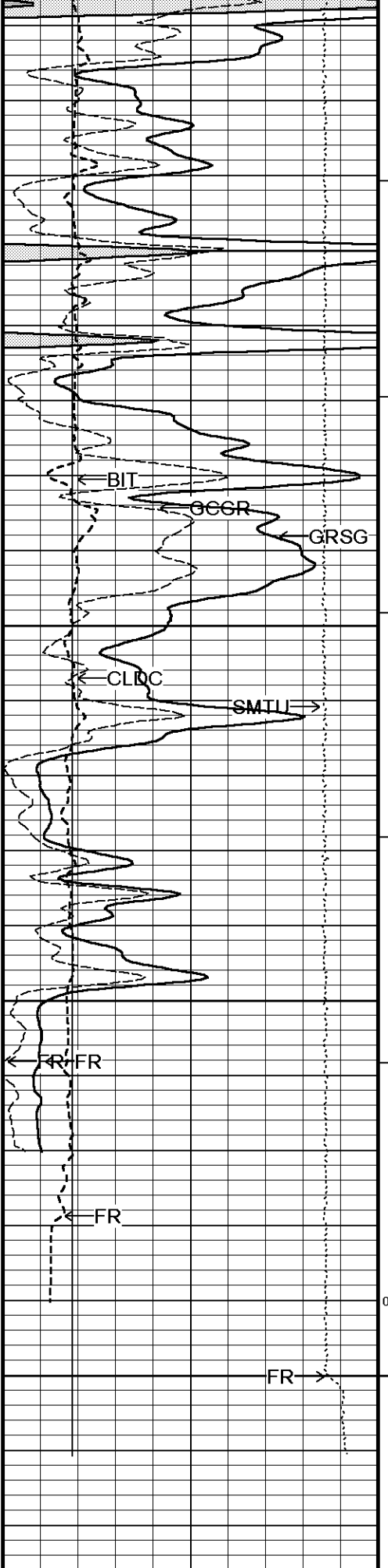


REPEAT SECTION



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 14-OCT-2015 08:28
Filename: C:\Minimus 15.03.5939\Logs\Larson Kirsti...\Larson Kirsting-Williams #1-1 Merge Repeat.dta
Recorded on 14-OCT-2015 03:21
System Versions: Plotted with 15.03.5939





108°

4700

109°

4750

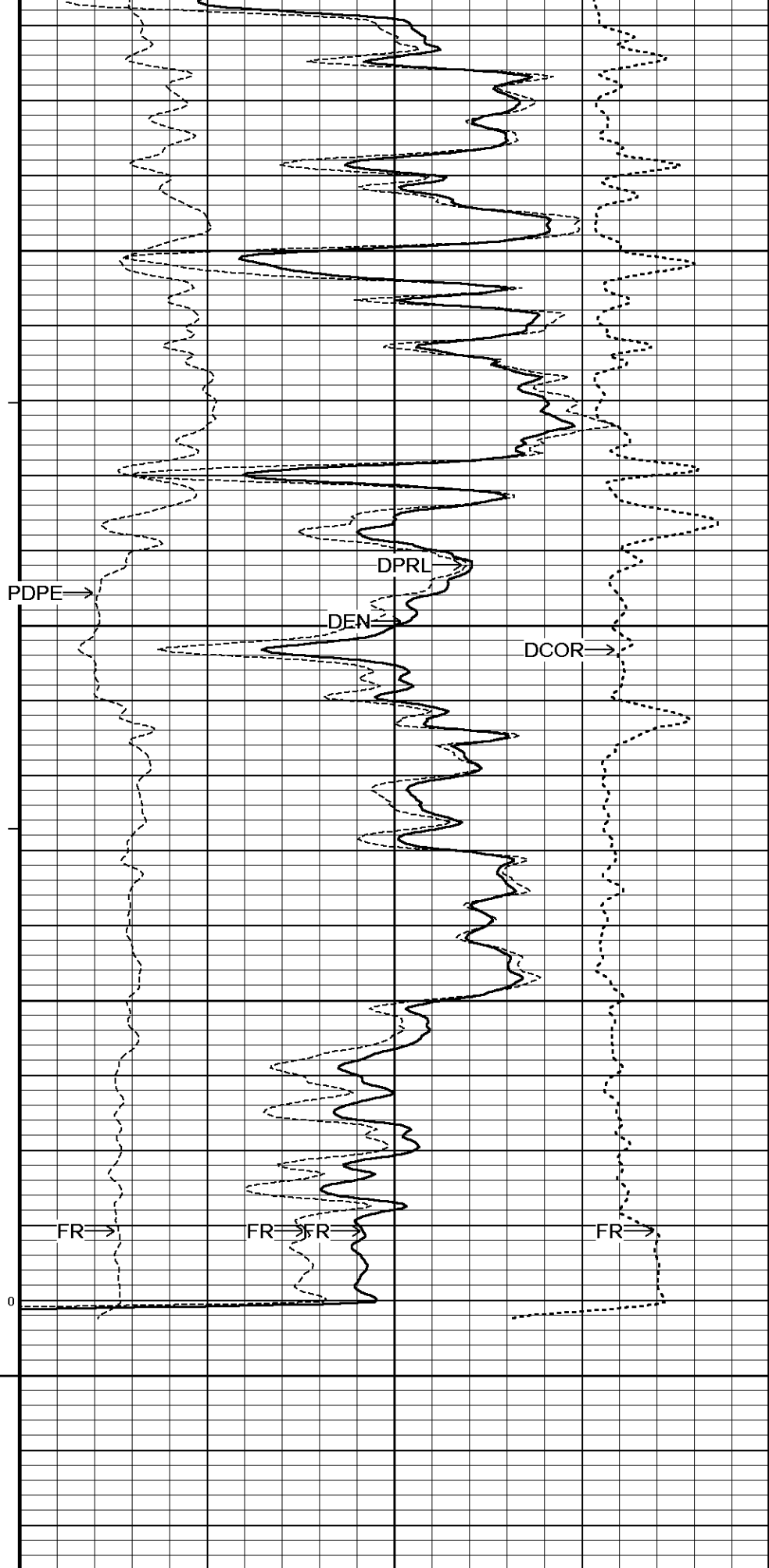
109°

4800

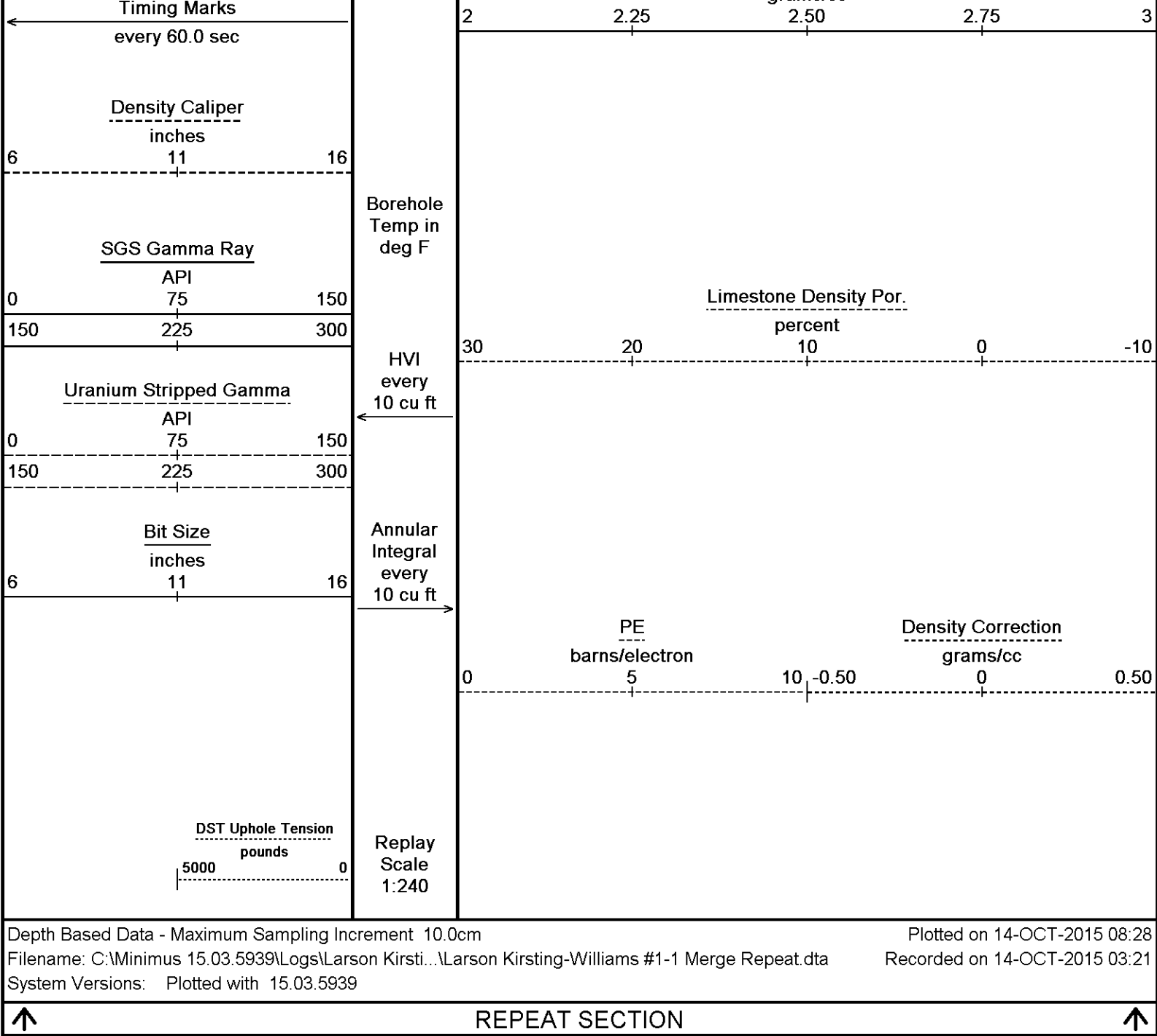
0

TD
4850

Depth
in
Feet



Compensated Density
grams/cc



BEFORE SURVEY CALIBRATION		
C:\Minimus 15.03.5939\Logs\Larson Kirsting-Williams #1-1\Larson Kirsting-Williams #1-1 Repeat.dta		
General Constants All 000		Last Edited on 14-OCT-2015,01:36
General Parameters		
Mud Resistivity	0.740	ohm-metres
Mud Resistivity Temperature	75.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	MMR Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	

RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0			Field Calibration on 14-OCT-2015 02:38
Reading No	Measured	Calibrated (lbs)	
1	13223.31	0.00	
2	14120.71	513.70	

Gamma Calibration MCG-C 123			Field Calibration on 13-OCT-2015 21:52
	Measured	Calibrated (API)	
Background	68	46	
Calibrator (Gross)	742	502	
Calibrator (Net)	674	456	

Gamma Calibration Tolerances MCG-C 123		
Ratio	1.479	1.40 1.475 1.55 Counts/API

Gamma Constants MCG-C 123			Last Edited on 14-OCT-2015,01:23
Gamma Calibrator Number	MCGGRCC141		
GRC-M Calibrator Jig in Use?	NO		
Inactive Background Jig in Use?	NO		
Mud Density	1.11	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Potassium Equivalence	Chloride		
K Mud Concentration	0.00	%	

High Resolution Temperature Calibration MCG-C 123			Field Calibration on 22-SEP-2015,11:43
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MCG-C 123			Last Edited on 22-SEP-2015,11:43
Pre-filter Length	11		

SP Calibration MCG-C 123			Field Calibration on 13-OCT-2015,21:26
	Measured	Calibrated (mV)	
Reference 1	100.6	100.3	
Reference 2	-99.7	-99.9	

Caliper Calibration MMR-A 11			Base Calibration on 28-SEP-2015 11:47 Field Calibration on 13-OCT-2015 21:23
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14179	5.98	
2	17353	7.97	
3	20653	9.86	
4	24559	11.92	
5	0	0.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	8.09	7.97	

Caliper Calibration Tolerances MMR-A 11		
Short Arm Field Cal.	8.09	7.77 7.97 8.17 in

Micro Normal and Micro Inverse Calibration MMR-A 11				Base Calibration on 28-SEP-2015 11:37 Field Check on 13-OCT-2015 21:21	
Base Calibration					
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m)		
			Resistor 1	Resistor 2	
Micro Normal	10.0	48.9	5.1	25.6	
Micro Inverse	9.8	48.6	3.4	16.9	

Micro Inverse	0.0	48.6	0.0	18.0
Channel	Base Check (ohm-m)	Field Check (ohm-m)		
Micro Normal	95.5	95.5		
Micro Inverse	63.3	63.3		

Micro Normal & Micro Inverse Calibration Tolerance MMR-A 11

Micro Normal Res. 1	10.0		ohm	Micro Normal Res. 2	48.9		ohm
Micro Inverse Res. 1	9.8		ohm	Micro Inverse Res. 2	48.6		ohm
Micro Normal Base Check	95.5		ohm-m				
Micro Inverse Base Check	63.3		ohm-m				
Micro Normal Field Check	95.5		ohm-m				
Micro Inverse Field Check	63.3		ohm-m				

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 31-AUG-2015,10:25

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor	0.5110
Micro Inverse K Factor	0.3380
Standoff Offset	0.0000 inches

Micro-Resistivity Caliper Constants MMR-A 11

Last Edited on

Sonde Configuration	Resistivity Mode
---------------------	------------------

Neutron Calibration MDN-A.B 114

Base Calibration on 09-OCT-2015 17:26
Field Check on 13-OCT-2015 21:57

Base Calibration					
	Measured	Calibrated (cps)			
	Near	Far	Near	Far	
	3115	97	3714	110	
Ratio	32.183		33.764		
Field Calibrator at Base			Calibrated (cps)		
			2099	3004	
Ratio			0.699		
Field Check			Calibrated (cps)		
			2082	3047	
Ratio			0.684		

Neutron Calibration Tolerances MDN-A.B 114

Ratio	32.183	
Base Check	0.699	
Field Check	0.684	

Neutron Constants MDN-A.B 114

Last Edited on 13-OCT-2015,21:53

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	

Formation Fluid Salinity Source	None	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 135		Base Calibration on 10-SEP-2015 11:35 Field Check on 13-OCT-2015 21:15	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	963.2	126.8	
Base Check		281.2	
Field Check		281.2	

FE Calibration Tolerances MFE-A.A 135			
Reference 2	963.2	-3% 963.2 +3%	ohm
Base Check	281.2	-2% 281.2 +2%	ohm-m
Field Check	281.2	-2% 281.2 +2%	ohm-m

FE Constants MFE-A.A 135		Last Edited on 13-OCT-2015,21:14	
Running Mode	No Sleeve		
MFE K Factor	0.1268		
Borehole Correction Constants			
Sonde Position	0.5	inches	
Hole Size Source	Density Caliper		
Hole Size Constant Value	N/A	inches	
Rm Source	Global Value: Temperature Corrected		
Temp. for Rm Corr.	MCG External Temperature		

High Resolution Temperature Calibration MAI-A.A 111		Field Calibration on 24-NOV-2014,10:23	
	Measured	Calibrated(Deg F)	
Lower	10.00	10.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MAI-A.A 111		Last Edited on 26-JUN-2014,15:06
Pre-filter Length	11	

Induction Calibration MAI-A.A 111				Base Calibration on 05-AUG-2014,09:34	
				Field Check on 13-OCT-2015 21:13	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	17.6	473.6	9.3	966.2	
2	6.4	385.9	7.6	821.4	
3	3.2	264.0	5.2	566.0	
4	2.1	135.5	2.6	279.2	
Array Temperature		23.0	Deg F		
Test Loop Calibration Verified		09-SEP-2015 14:21			
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	11.6	3872.1	
2	0.0	0.0	28.8	3526.4	
3	0.0	0.0	28.2	3019.8	
4	0.0	0.0	18.5	2057.0	
Deep			17.1	1960.9	
Medium			41.8	3974.7	
Shallow			42.9	5230.6	
Array Temperature		0.0	77.9 Deg F		

Induction Calibration Tolerances MAI-A.A 111			
--	--	--	--

Low Conductivity 1	17.6		mmho/m	High Conductivity 1	473.6		mmho/m
Low Conductivity 2	6.4		mmho/m	High Conductivity 2	385.9		mmho/m
Low Conductivity 3	3.2		mmho/m	High Conductivity 3	264.0		mmho/m
Low Conductivity 4	2.1		mmho/m	High Conductivity 4	135.5		mmho/m
Background Vx 1	0.0		mmho/m	Phase Check Loop 1	0.0		%
Background Vx 2	0.0		mmho/m	Phase Check Loop 2	0.0		%
Background Vx 3	0.0		mmho/m	Phase Check Loop 3	0.0		%
Background Vx 4	0.0		mmho/m	Phase Check Loop 4	0.0		%

Induction Constants MAI-A.A 111

Last Edited on 13-OCT-2015,21:12

Induction Model	RtAP-WBM		
Borehole Correction Constants			
Tool Centred	No		
Hole Size Source	Density Caliper		
Hole Size Constant Value	N/A		
Stand-off Type	Fins		
Stand-off	0.50		
Number of Fins on Stand-off	8.0000		
Stand-off Fin Angle	45.00		
Stand-off Fin Width	0.5000		
Rm Source	Global Value: Temperature Corrected		
Temp. for Rm Corr.	MCG External Temperature		
Squasher Start	0.0020	mhos/metre	
Squasher Offset	N/A	mhos/metre	
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000
Calibration Site Corrections			
Channel 1	0.00	mmhos/metre	
Channel 2	0.00	mmhos/metre	
Channel 3	0.00	mmhos/metre	
Channel 4	0.00	mmhos/metre	
Symmetrised Receiver Gains			
Receiver 1	1.00		
Receiver 2	1.00		
Receiver 3	1.00		
Receiver 4	1.00		
Apparent Porosity and Water Saturation Constants			
Archie Constant (A)	1.00		
Cementation Exponent (M)	2.00		
Saturation Exponent (N)	2.00		
Saturation of Water for Apor	100.00	percent	
Resistivity of Water for Apor and Sw	0.05	ohm-m	
Resistivity of Mud Filtrate for Sw	0.00	ohm-m	
Source for Rt	0.00		
Source for Rxo	0.00		

Caliper Calibration MPD-C.A 216

Base Calibration on 09-OCT-2015 16:05
Field Calibration on 13-OCT-2015 21:25

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	20385	3.99
2	30496	5.98
3	40608	7.97
4	50415	9.86

5
661185
N/A11.92
N/A

Field Calibration

Measured Caliper (in)
7.91Actual Caliper (in)
7.97

Caliper Calibration Tolerances MPD-C.A 216

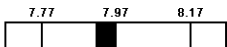
Short Arm Field Cal. 7.91  in

Photo Density Calibration MPD-C.A 216

Base Calibration on 09-OCT-2015 16:45
Field Check on 13-OCT-2015 21:20

Density Calibration

Base Calibration

Measured

Calibrated (sdu)

Near

Far

Near

Far

Background

1073

1261

Reference 1

53333

25886

59556

30836

Reference 2

21281

2450

24941

2541

Field Check at Base

1073.3

1260.9

Field Check

1074.9

1261.8

PE Calibration

Base Calibration

Measured

Calibrated

WS

WH

Ratio

Ratio

Background

195

952

Reference 1

21614

53145

0.410

0.371

Reference 2

6037

21153

0.289

0.272

Field Check at Base

194.8

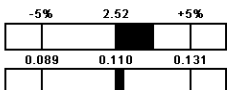
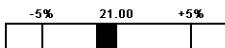
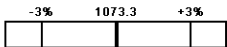
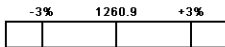
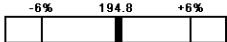
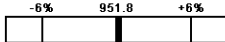
951.8

Field Check

195.9

956.2

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio 2.59 Far Density Ratio 20.70 PE Calibration 0.112 Near Den. Field Check 1074.9 Far Den. Field Check 1261.8 PE WS Field Check 195.9 PE WH Field Check 956.2 

Density Constants MPD-C.A 216

Last Edited on 14-OCT-2015,01:23

Density Source Id

P50557B

Nylon Calibrator Number

DNCE695

Aluminium Calibrator Number

DACD698

Density Shoe Profile

8 inch

Caliper Source for Processing

Density Caliper

PE Correction to Density

Not Applied

Mud Density

1.11

gm/cc

Mud Density Z/A Multiplier

1.11

Mud Filtrate Density

1.00

gm/cc

Dry Hole Mud Filtrate Density

1.00

gm/cc

DNCT

0.00

gm/cc

CRCT

0.00

gm/cc

Density Z/A Correction

Hybrid

Matrix Density (gm/cc)

Depth (ft)

2.71

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00 0.00
0.00 0.00

Spectral Gamma Calibration SGS-E.J 150

Base Calibration on 10-SEP-2015 11:04
Field Calibration on 13-OCT-2015 21:37

Base Calibration

Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	125.1	45.8	5.4	1.1	2.0
Calibrator (Gross)	255.7	133.8	28.8	1.1	1.9
Calibrator (Net)	130.7	88.0	23.4	0.0	-0.1

	K %	U ppm	Th ppm
Concentrations	5.8	0.0	0.0

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	125.1	45.8	5.4	1.1	2.0
Calibrator (Gross)	521.6	188.0	17.4	9.3	5.0
Calibrator (Net)	396.5	142.3	12.0	8.2	3.0

	K %	U ppm	Th ppm
Concentrations	0.0	14.8	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	125.1	45.8	5.4	1.1	2.0
Calibrator (Gross)	461.2	171.3	14.3	7.1	17.3
Calibrator (Net)	336.1	125.6	8.9	6.0	15.3

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.3

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	125.1	45.8	5.4	1.1	2.0
Calibrator (Gross)	971.7	397.8	50.7	14.9	19.6
Calibrator (Net)	846.6	352.0	45.3	13.8	17.6

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	163	32
Calibrator (Gross)	1445	282
Calibrator (Net)	1282	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.4	38.6	4.7	0.8	1.6
Calibrator (Gross)	958.9	395.6	50.3	15.4	20.2
Calibrator (Net)	846.5	357.0	45.6	14.5	18.6

Spectral Gamma Check Tolerances SGS-E.J 150

Base Check K	6.2		%
Base Check U	14.2		ppm
Base Check T	43.1		ppm
Field Check K	6.4		%
Field Check U	13.3		ppm
Field Check T	46.3		ppm

Spectral Gamma Constants SGS-E.J 150

Last Edited on 14-OCT-2015,01:23

Background Calibrator Number	002
Mixture Calibrator Number	006
Potassium Calibrator Number	002
Uranium Calibrator Number	001

Thorium Calibrator Number	001	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

DOWNHOLE EQUIPMENT

C:\Minimus 15.03.5939\Logs\Larson Kirsting-Williams #1-1\Larson Kirsting-Williams #1-1 Repeat.dta

Cablehead, 11 pin
CBH-CA 155 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Spectral Gamma Ray Sub
SGS-E.J 150 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

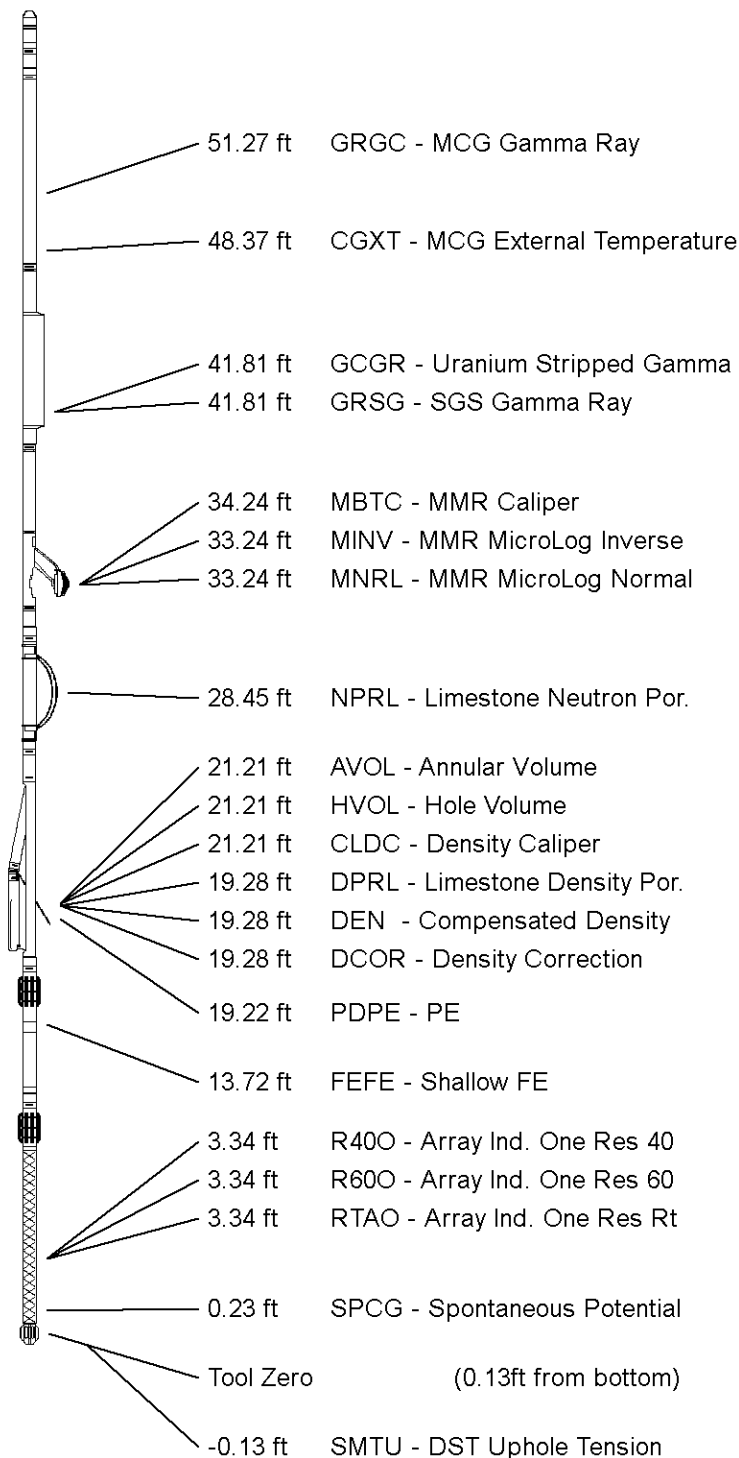
Compact Neutron
MDN-A.B 114 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 58.95 ft Weight: 513.7 lb



All measurements relative to tool zero.

COMPANY
WELL
FIELD

LARSON ENGINEERING, INC
KIRSTING-WILLIAMS #1-1
WILDCAT

PROVINCE/COUNTY FORD
COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	2272.00	feet	First Reading	4831.00	feet
Elevation Drill Floor	2270.00	feet	Depth Driller	4850.00	feet
Elevation Ground Level	2263.00	feet	Depth Logger	4850.00	feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG